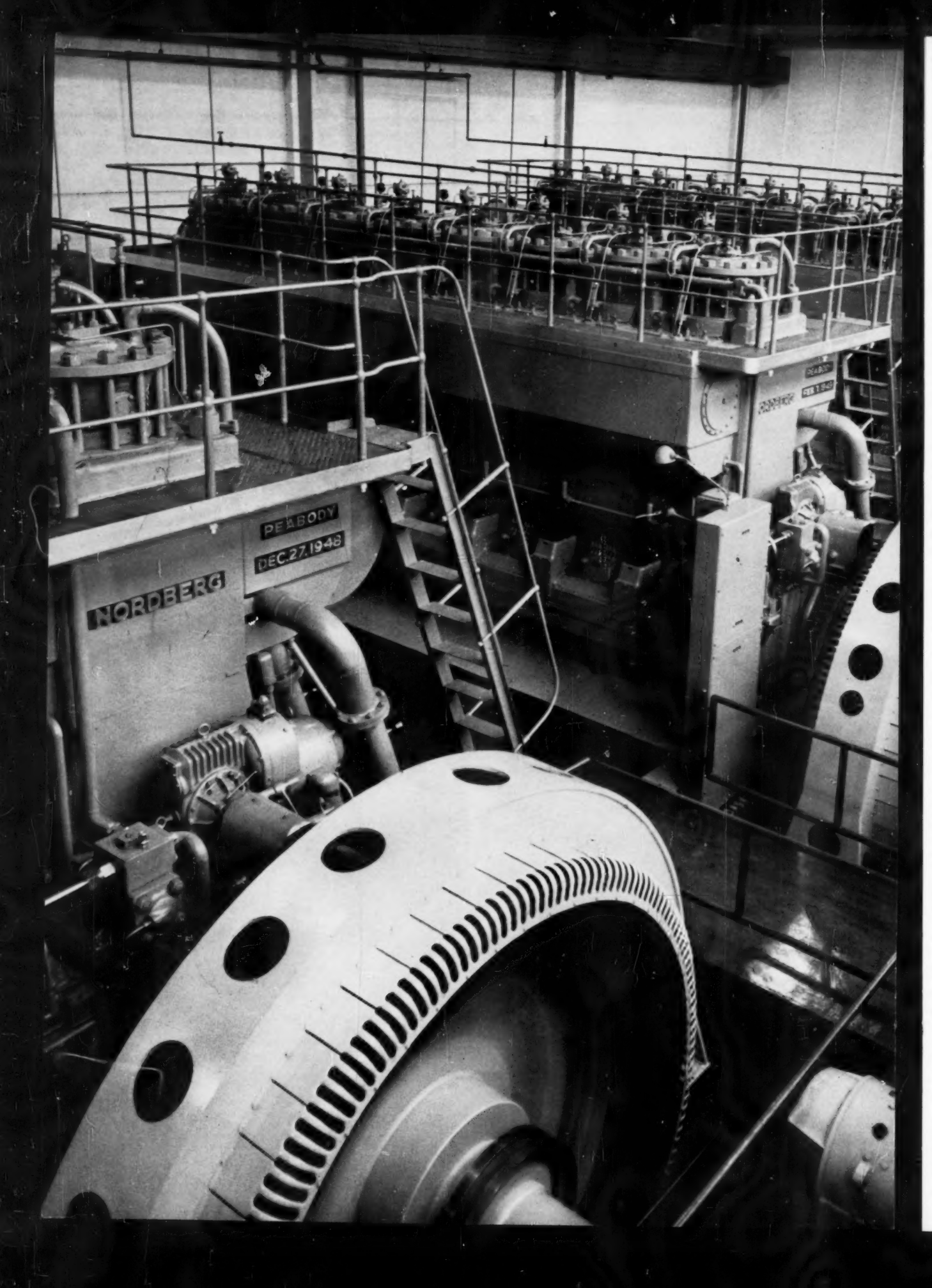
diesel power

January 1958

1957 1958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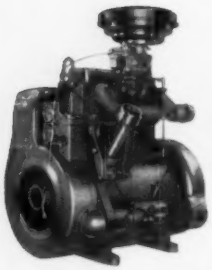
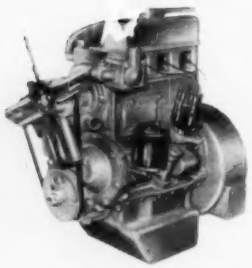
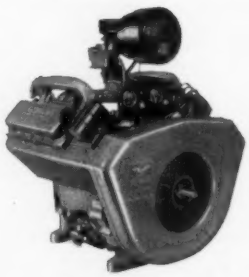


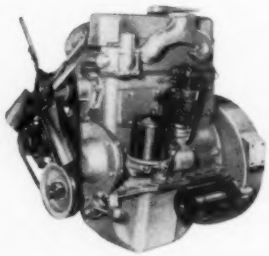
Lycoming-Design Hercules Two Cylinder Air-Cooled Industrial Gasoline Engine, Displacement 88 cu. in.



Hercules Three Cylinder Water-Cooled Gasoline (or Diesel) Engine, Displacement 130-149-169 cu. in.

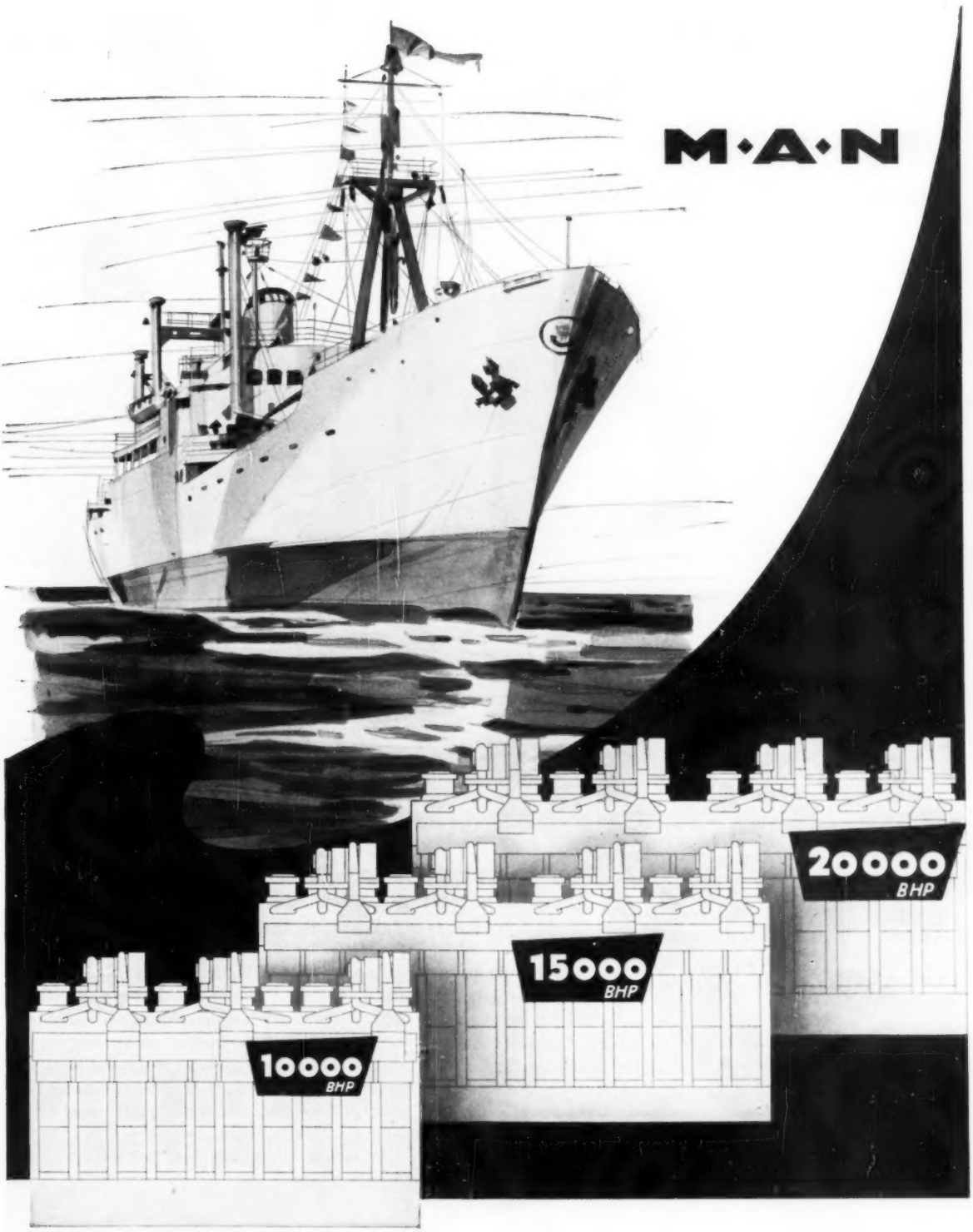


Lycoming-Design Hercules Four Cylinder Air-Cooled Industrial Gasoline Engine, Displacement 176 cu. in.



Hercules Four Cylinder Water-Cooled Diesel (or Gasoline) Engine, Displacement 173-198-226 cu. in.

Hercules engines are also available in six cylinder 260, 298 and 339 cu. in. valve-in-head water-cooled types.



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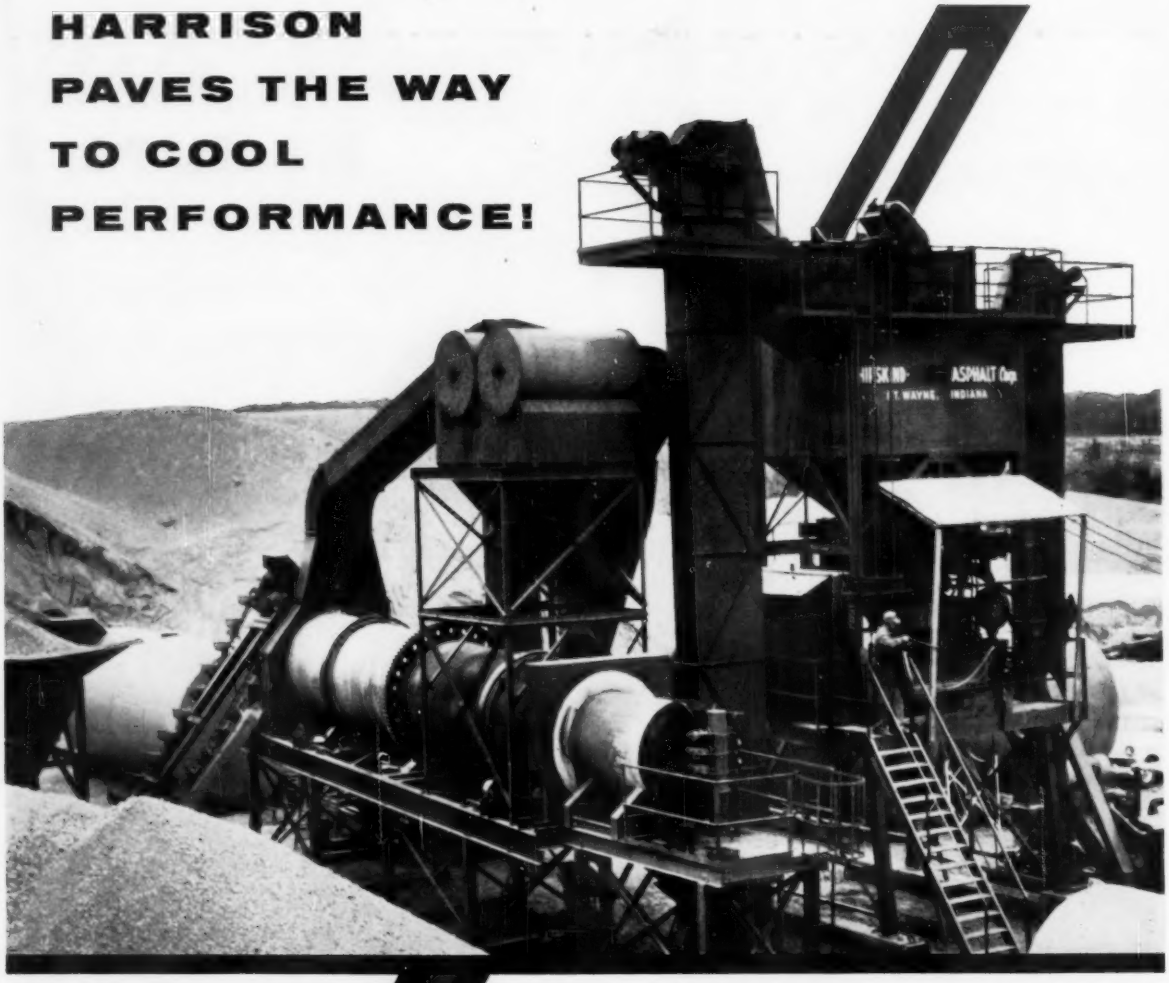

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FROM THE PROGRESS OF THE PAST — GM — THE PROMISE OF THE FUTURE

HARRISON RADIATOR DIVISION • GENERAL MOTORS CORPORATION • LOCKPORT, NEW YORK

editors notes...

You'll want to read about...

Diesel Market Prospects for 1958. Starting on Page 16, we have detailed facts and figures that should influence the diesel industry in the coming year. Eight major fields of usage are covered. Estimates are made in each case as to the number of engines that can be absorbed. Where do you fit in this picture? If you are interested in the OEM market, estimated annual production is given. If the aftermarket for parts, supplies, tooling or services is the target, it's about 12 times the annual production. It *can* be a good year with hard, imaginative selling—and confidence . . . .

How diesels play a vital role in defense systems (Pg. 24). Prime mover power in stationary or mobile applications is being more fully recognized as a necessity. This key defense setup shows it and with this year's rapid developments, new opportunities can be expected to arise . . . .

A case in point, a new application for diesels and a new pump, not only for the military but for commercial usage (Pg. 28). Here's a brand new application for mobile diesel power right straight out of the missile age . . . .

A new engine for truckers, particularly, to consider (Pg. 26). It was developed to fill a gap in the Cummins line and for the needs of a particular type of service . . . .

You'll want to read about...

How finely-finished parts can be marked for identification without any deformation (Pg. 28). When questions of warranty or who did the work arises, permanent marking will give the answer. It could save you money . . . .

Underground operation of diesels with safety (Pg. 30). Here's a mine locomotive with torque converter drive and a catalytic exhaust purifier. There's no chance for ignition of natural explosive gases in mines and the exhaust contributes no appreciable toxic fumes . . . .

A formula for selling engines. Here (Pg. 32) is the way that an engine distributor has boosted his sales to become one of the largest Waukesha outlets in the country. It's a formula that you can apply, whatever phase of the industry you are in . . . .

How utility of diesels in oil well drilling operation is increased by a new type drilling tender for offshore work (Pg. 36). Diesels generate electrical power for propulsion of the tender and then for the drilling platform when it reaches it. Dual-duty helps to cut costs.

We start the year with some changes in format. There will be more. Our objective is to give you good, practical material, clearly and concisely. It saves your reading time and gives you important ideas faster. We will be able to pack more into each issue and therefore help you more. Let's have your comments so that we can serve you, our valued reader, better.

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diesel power

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The Magazine of Piston and Turbine Power

Editorial

Let's Cut Ownership Costs 13

Special Feature

Looking Ahead at 1958 16

Railroads
Highway Transportation
Municipal and Utility Use
General Industry
Petroleum
Mining Operations
Construction Equipment
Agriculture

Articles

No Diesel Power—No Key Defense Systems 24
Cummins' Latest—Model HF-6-B 26
Diesels Fuel Missiles 28
Mark Finely-Finished Surfaces Permanently Without Deformation 29
Underground Operation With Safety 30
Customer Service Builds Sales 32
Double-Duty In Drilling Tender 36

Departments

Highlights 15
Service Section 38
Industry News 40
New Products 44
People and Plants 48
New Literature 50
Advertisers Index 58

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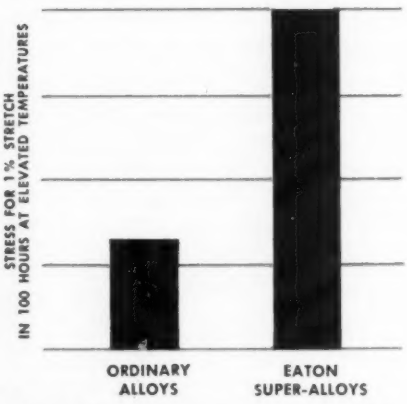

The results of laboratory tests represented by the above graph indicate the superior hot-strength of Eaton Super-Alloys over commonly used exhaust valve materials.

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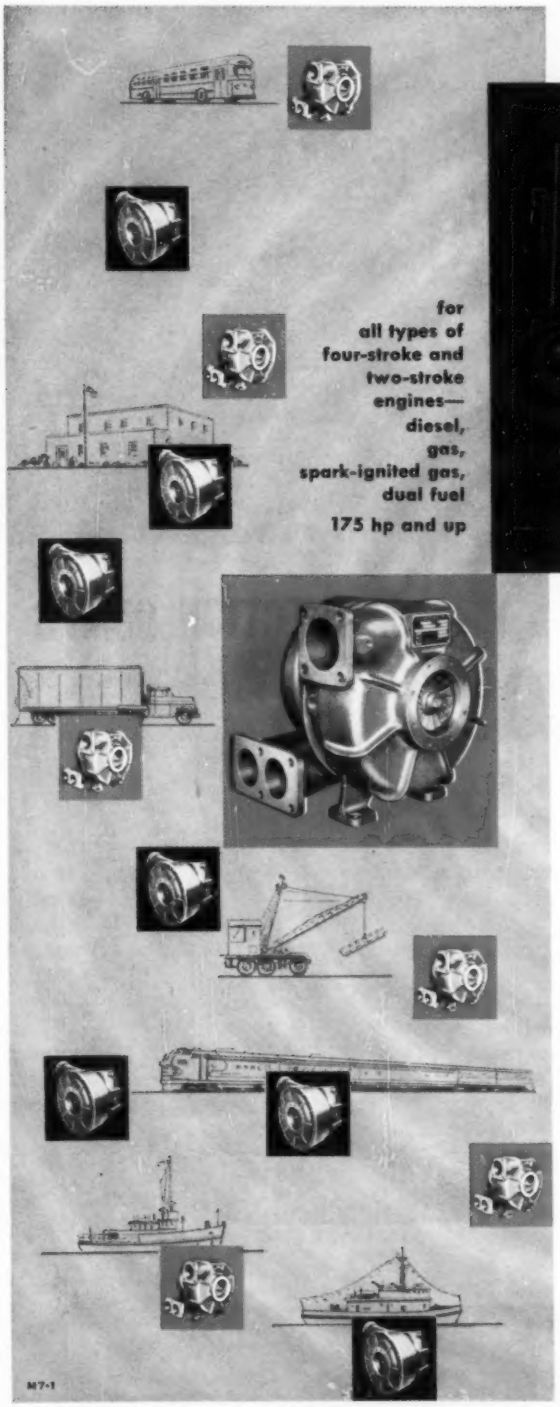

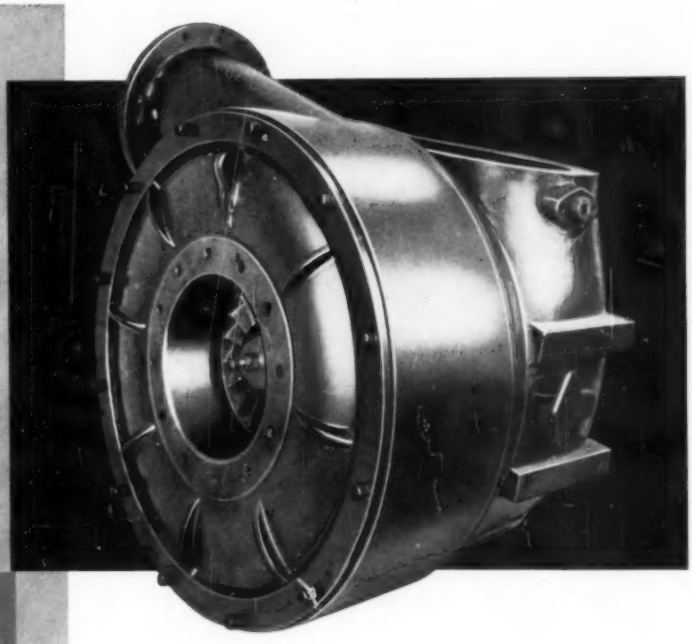

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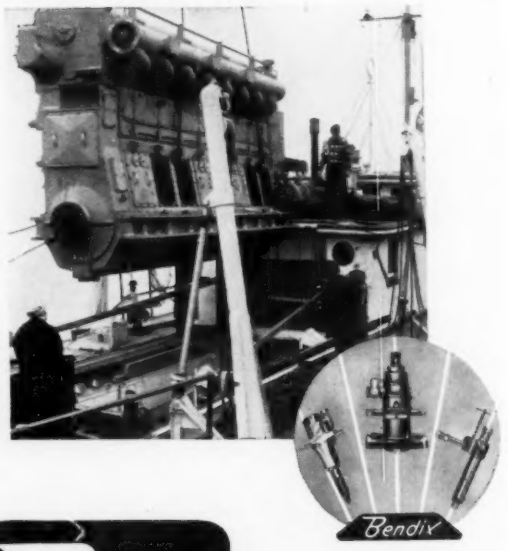

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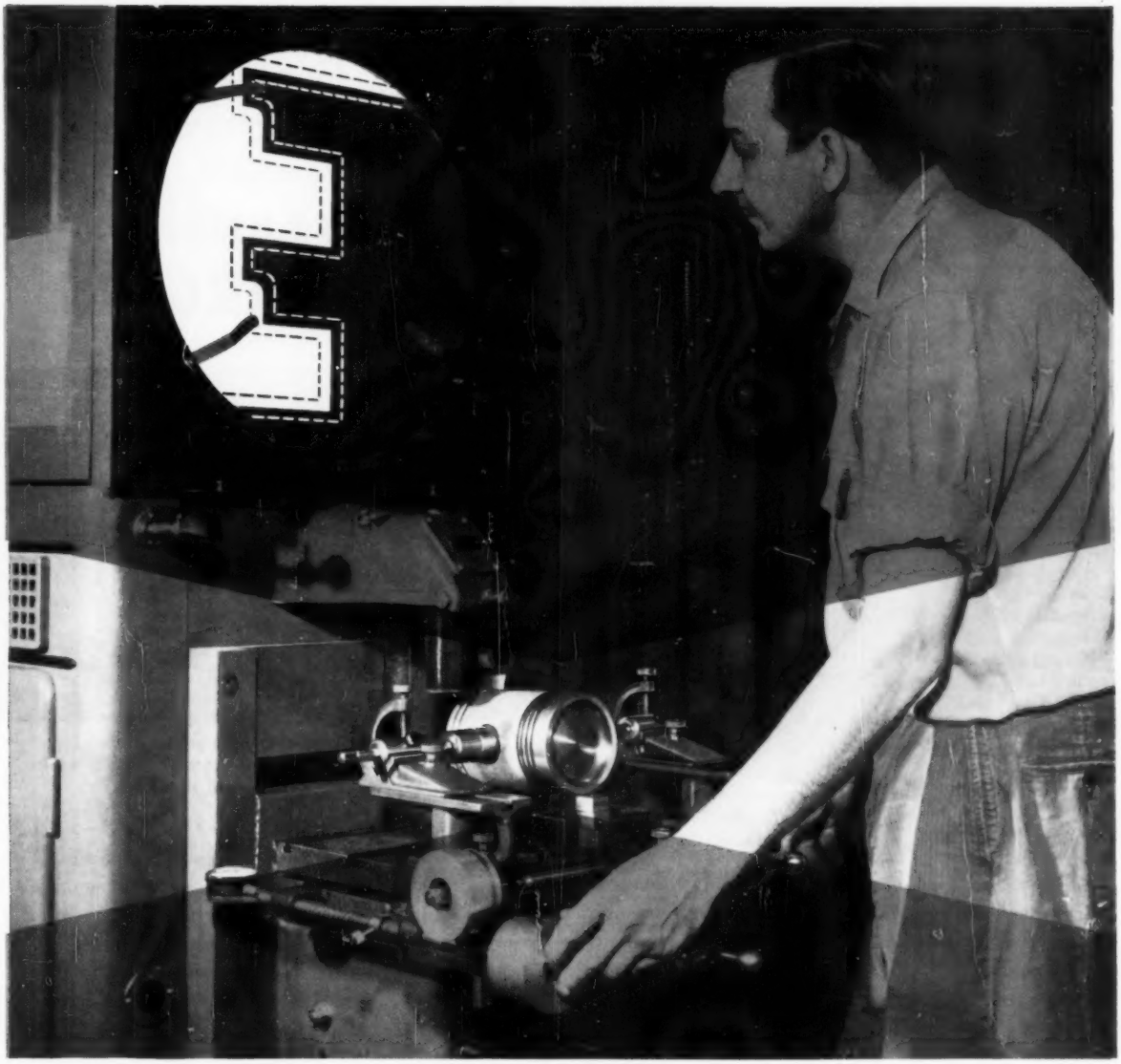

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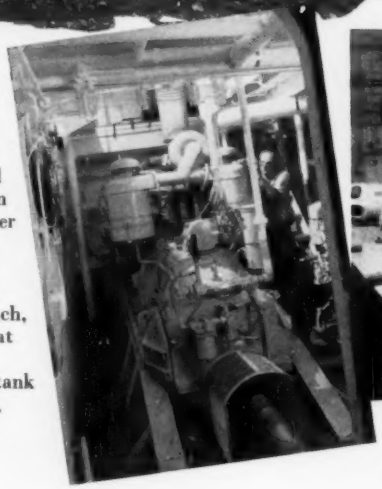
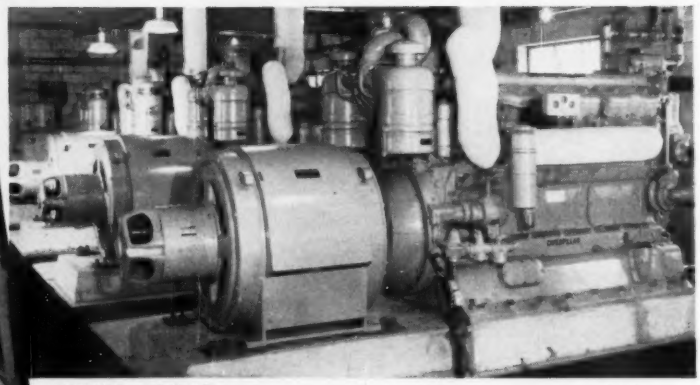


MARINE turbocharged diesel engines in the inland river towboat, *Papa Guy*, are rated at 490 horsepower each, allow the boat to tow two 20,000-barrel tank barges per trip.



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In every diesel application, AiResearch turbochargers have improved engine performance to an outstanding degree. The exceptional efficiency of their basic design and turbine wheels makes them the finest in the industry.

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• *Your inquiries are invited.*

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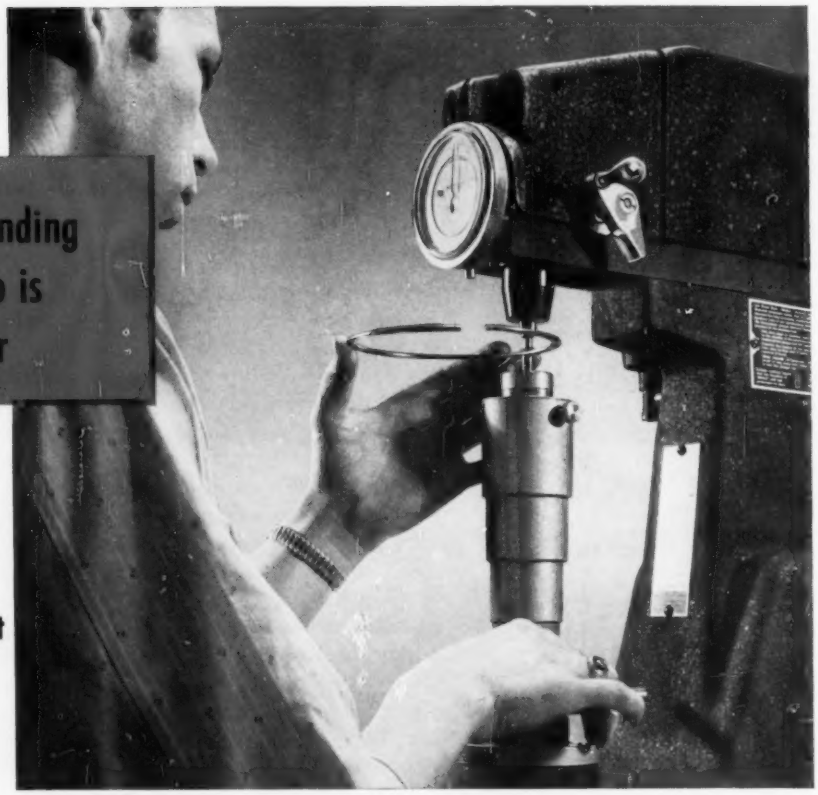
Editorially speaking -

Let's Cut Ownership Costs

Exploring the jungle of conflicting estimates for 1958 business prospects, armed with only a pad and pencil, is an awesome and confusing experience. Cutting through the verbiage underbrush, we found a path to guide us. And while there will be ups and downs, the trend of this engine sales path seems slightly upward. Naturally, there are a lot of if's. Some are within our control; some are not. We comment in our forecast that a cost squeeze (and this will happen for sure) focuses attention on means of more economic operation. This could help diesel sales. And any reduction in overall cost of ownership will make diesels even more attractive. One possible means of cutting is by a greater degree of engine standardization. Individuality need not suffer. Longer production runs are one way to cut unit costs. One engine builder covers a broad horsepower range with only three bore-stroke combinations; another uses over twenty. Think of the effect on interchangeability and also on production runs. One builder uses over ten types of nozzle holder assemblies. Think of the effect on the injection equipment builder's production—short, costly runs plus stocking and distribution expense. These fellows have done a good job in bringing down costs of injection equipment, one of the most expensive engine components. And they could go further if most of their production wasn't required to be special. Engine builders might learn from house builders. They design around standard items—millwork, hardware, etc.—yet look at the individuality they get. Another way to cut ownership costs would be by more realistic parts pricing. Here are two extreme cases. List price of a tiny escutcheon pin for mounting a nameplate—$0.50 each! A standard flat fillister-head screw—over $6.00; The prices are not as important as the thinking behind such pricing (no one buys them from this accessory manufacturer as long as there is a good hardware store around). Many manufacturers would make more money through increased volume if they were to lower prices to logical levels. And they'd hold a bigger share of the market. Most people prefer to buy original equipment parts but price is becoming a big factor. So here are a couple of ideas to think about. With things tighter, economies of diesel operation will be more attractive than ever. And anything that can be done to lower ownership costs improves prospects for diesel sales in 1958.

BPE



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Cyclan plus chrome in Sealed Power diesel piston rings positively defeats the excessive heat, side-wear, breakage, friction and corrosion that cause other rings to fail. These unique Sealed Power diesel rings break in fast—last, and last, and last.

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Sealed Power are the world's most experienced manufacturers of sleeves and sleeve assemblies, too. They built and staffed the world's largest plant devoted exclusively to sleeve and sleeve assembly manufacturing. Sealed Power have more know-how, more experience in this highly specialized field.

Feel free to draw on this experience. It may help you with some diesel problem. Write or call. The engineers will be glad to discuss your problem or application with you.

SEALED POWER CORPORATION • MUSKEGON, MICHIGAN • ST. JOHNS, MICHIGAN • ROCHESTER, INDIANA

DETROIT OFFICE • 7-236 GENERAL MOTORS BUILDING • PHONE TRINITY 1-3440

Sealed Power Piston Rings

PISTONS • CYLINDER SLEEVES

Leading Manufacturer of Automotive and Industrial Piston Rings Since 1911

Largest Producers of Sealing Rings for Automatic Transmissions and Power Steering Units

highlights

"A nuclear locomotive would mean minimum utility with maximum danger." This succinct summary is made by Dr. Edward Teller in "Atomic Energy in the Year 2000" in Standard Oil Co. of N. J. house organ.

Trucks hauled 4.8% more intercity freight during September than a year ago. This is best monthly gain in truck tonnage thus far in 1957. Biggest September gains were in Southern region — up 10.1% and the Pacific region — up 9.7%, ATA reports.

C & D Batteries are using AccuRay for automatic control of plate-pasting operations. This is the same system Chesterfield plugged for quality control of cigarettes.

Time out for tea—diesel style! Even the locomotive engineer has his spot of tea en route Eastern Division of the British Railway. The first diesel-electric delivered to that road has a small electric grill in the cab.

Tractors valued at $56 million were produced in September. Of the total 17,917 tractors, 5234 were diesel powered, 1313 had LPG engines and the rest were gasoline driven. Shipments during September were 18% above the same month in 1956. All these figures exclude contractors' off-highway types and garden tractors.

Aluminum use is reported up with the building industry leading in usage, closely followed by the transportation industries. Advantages of weight reduction induced the transportational field to use 18.3% of primary aluminum produced. According to the Aluminum Association, usage is increasing in such established uses and new applications are continually developing.

Proving that sound management techniques fit all businesses, Pacific Intermountain Express has just announced that Travis F. Green has been named Director of Market Research. Parkman Sayward, V-P for sales and traffic, said that Green would explore new traffic potentials which may be developed by utilization of new methods and equipment. Trucking marches on.

Pipe line pilots take a powder —literally. When scouting for leaks, washouts or other pipe line failures, the flyer bull's-eyes it with a yellow powder bomb. The splash of color marks telltale oil or discolored soil which might otherwise be overlooked by ground repair crews.

Diesels are being tested by Dodge in 3- and 4-ton tractors. They may be on the market by next year. Last diesel-powered Dodge was available in 1942.

Diesel-electric A and B units in service total 27,108. There are 2697 steamers still operating and 587 electric locomotives. AAR also reports 295 diesel-electrics on order. No steam or electric units are on order.

American MARC sees increased sales in 1958 from broader applications and additional government contracts. Developments under consideration include a 7½-hp air-cooled diesel outboard motor.

Automatic farming is practical with 12-ton diesel tractor-hauled machine. With the Wonsover just one operation clears, plows, plants, fertilizes and compacts the soil. Seeding device plants seed fumigated by diesel exhaust gases.

Computers serve as tools for management as well as engineering. Mechanical brains, according to Walter Finke, president of Datamatic Division, Minneapolis-Honeywell can sort, organize and correlate a labyrinth of facts and figures into workable form and give a broad dimension on which to base management decisions.

"An adult erector set with practical application" would be a good description of a new kit from Sweden. Precision working models of machines can be made with a wide variety of precision-machined components—ball bearings, gears, sprockets, couplings, wheels, structural shapes, etc. It's possible to make such mechanisms as reciprocating and slide motions, geared transmissions, differentials and coil spring devices with standard kit components. If so, it might be a cheap way to try out new designs.

LOOKING AHEAD at 1958

It can be a good year for diesel engine sales. "Confidence" will be the key to what happens in the year ahead—confidence from top national levels right down to the man in the street. On the same key chain is "hard work" in the face of tighter competition. Neither the Sputnicks or the hanging up of a new calendar have altered the basic soundness of our economy. So with confidence and harder work, our industry can take advantage of expanding power needs and wind up with a good year in 1958.

1958 PROMISES many remarkable developments. Our newspapers will be filled with headlines of satellites, missiles, new nuclear developments and talk of all the technology and hardware ushering a new age. It will be a year of concentrated scientific effort.

But this will be only one side of the story. Consider that while we're talking of landing on the moon that there are literally millions of people who have never been off the ground in an airplane. This simply dramatizes the split personality of modern living.

Being on the threshold of space travel does not alter the fact that there is a day-to-day industrial complex that must be kept going. It provides the jobs and goods that keep our living standards high. It's also the source of tax money, directly and indirectly, that pays the tab for out-of-this-world developments.

Sure, there are going to be dislocations. There always are in periods of transition and shifts in emphasis. But the broad industrial base will not be substantially altered and new horizons create new opportunity. This is particularly true of so basic an industry as ours. Power, particularly efficient, dependable low-cost power, will continue in demand and opportunities for new applications will increase. It's a time for imaginative selling.

Some of the factors that are worrying business in general — increased governmental spending in some areas with curtailment in others, lowered profit margins, reduced prospect for tax relief, etc. — could actually benefit our industry. For users of prime movers, the operational cost squeeze is on. They'll be looking for better and cheaper ways to get power and we have the answer.

Diesel-electric locomotive builders found this out when they started to crack the market. Railroads in the toughest financial shape were the best customers because they couldn't afford to be without the economic benefits of diesel power. When you're fat and happy, you can better afford inefficiency.

Modern management, whether of a trucking line or a farm, has to cut costs and increase productivity — or price themselves out of business. In the applications to be discussed, diesels can do both. So the climate should be right for a good diesel market.

Totals by Years

	1958 Est.	1957 Est.	1956	1955	1954	1953	1952
Railroads	1,800	1,625	1,625	1,200	1,140	2,201	3,140
Highway Transport	34,000	30,000	24,800	20,209	13,272	16,390	17,846
Marine*	2,900	2,770	2,695	2,409	2,321	2,245	2,080
Municipal & Utility	470	,447	440	431	425	392	355
General Industry	25,000	16,700	13,500	12,800	11,200	15,780	12,987
Petroleum	5,250	6,620	5,075	4,630	4,310	4,280	4,164
Mining	4,500	4,010	3,925	3,468	2,953	2,635	1,950
Construction	41,500	52,500	38,150	29,700	26,200	28,400	25,286
Agriculture	42,000	35,000	32,800	39,300	43,307	58,158	68,327
TOTALS	157,420	149,672	123,010	114,147	105,128	130,481	136,135

Figures include all sizes and types of diesel, dual-fuel, and gas-burning engines.
*Marine Field is covered by companion publication RIVERS & HARBORS

A BREAKDOWN OF ESTIMATED DIESEL ENGINE SALES FOR 1958

			Estimated Engines	Estimated Horsepower
RAILROADS	Hp Range 200-2400	Est. Aver.—1200 hp	1,800	2,160,000
HIGHWAY TRANSPORT	Hp Range 120-200	Est. Aver.— 140 hp	34,000	4,760,000
MARINE*	Hp Range 165-4800	Est. Aver.— 400 hp	2,900	1,160,000
MUNICIPAL & UTILITY	Hp Range 200-5000	Est. Aver.—1250 hp	470	587,500
GENERAL INDUSTRY	Hp Range 60-3600	Est. Aver.— 100 hp	25,000	2,500,000
PETROLEUM	Hp Range 60-2400	Est. Aver.— 300 hp	5,250	1,575,000
MINING	Hp Range 60-550	Est. Aver.— 150 hp	4,500	675,000
CONSTRUCTION	Hp Range 60-550	Est. Aver.— 150 hp	41,500	6,225,000
AGRICULTURE	Hp Range 30-180	Est. Aver.— 60 hp	42,000	2,520,000
TOTALS			157,420	22,162,500

*Marine field is covered by companion publication RIVERS & HARBORS

What is the Diesel Market?

There are two diesel markets. One is the original equipment market (OEM); the second, the aftermarket. Engine builders and their suppliers are primarily interested in annual production of engines and the portion of the aftermarket represented by the sale of OEM replacement parts and components.

The aftermarket is the target of those dealing in serices, venders of consumable items, and manufacturers of parts and accessories purchased by engine users. It's a big market comprising over 1.9-million engines or about 12 times the annual engine production.

Service requirements of this growing population has created an additional and secondary market that is attractive to many manufacturers. This could be called the "tool" market. It ranges from hand tools to precision machine tools. Examples of the latter are the currently available crankshaft and camshaft grinders. Included in this market are also the testing and diagnosis tools from injection pump calibrating stands to dynamometers.

In the following sections, we'll give some facts and figures, some estimated production figures and comment on trends as they affect the diesel market. And, remember, it's a big one.

Railroads

Dieselization of American railroads is nearly complete with the result that current production is at about 50% of the 1952 level. Nine-month figures for 1957 show 1015 diesel-electric units installed in service on Class 1 railroads with 296 units on order. Of these 266 are diesel-electrics and 30 gas turbine units.

Current trends appear to be in the direction of multi-purpose units. Their operational flexibility improves utilization. There has also been considerable interest in light-weight, high-speed passenger locomotives with specialized cars. Several are in daily operation and evaluation is in progress.

These trains are aimed at gaining greater passenger volume through high-speed, more comfortable runs while at the same time reducing operational costs. They are principally for main-line service with railcars of the RDC type doing the same thing on feeder lines.

Export sales look good. All locomotive builders have models suited for foreign use and sizable shipments are going all over the free world. Potential sales—and the subsequent market for replacement parts—are tremendous and we have the products.

Both OEM and after-market activity are at pretty high levels even though new-equipment sales are well below peak production years. The 27,200 units in operation on Class 1 railroads alone are a good market. Consumed items, parts and accessories are used in tremendous volumes. One engine builder states that far more parts have gone into replacement than into new production for several years now.

Many early units are getting tired. Also, refinements have made later units much more efficient. Both factors combine to make complete rebuilding and up-dating a brisk business. Going a step further, EMD launched a re-manufacturing program last year. Old locomotive units come out of the factory with every modern feature and a new-unit guarantee.

Adding it all up, the number of engines in railroad service, all working hard, create a good market potential for those who do or can supply this industry. And our prediction of 1800 engines for 1958 should be absorbed in new production and re-engining. Included in the total are the engines to be used for mechanical refrigeration of reefer cars, undercar units for lighting and air conditioning, and miscellaneous auxiliary units.

(*Continued on Page* 20)

CP GAS ENGINES SET PERFORMANCE RECORDS

at The Peoples Natural Gas Company

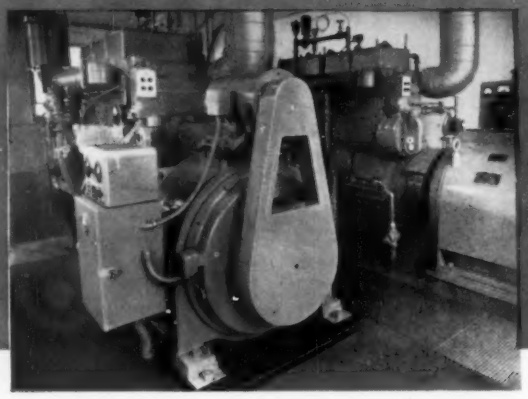
...NO REPLACEMENT PARTS IN OVER 20,000 HOURS!...

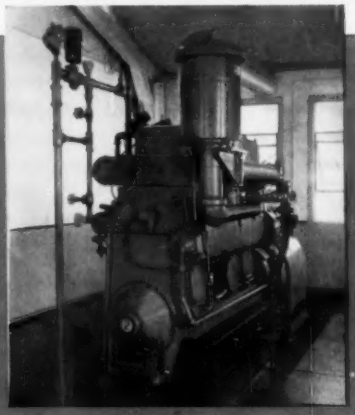
...NO PLUGS OR MAGNETO POINTS REPLACED IN OVER A YEAR!

...LUBE OIL CONSUMPTION 18,000 HP/hrs. PER GALLON!...

FUEL CONSUMPTION – LOW AS 7.2 cu. ft. per HP/hr. @ FULL LOAD

Entire plant operation depends on the CP-39, left, and the CP-49 Gas Engine in right background.





Front view of the CP-49 in operation at Peoples Natural Gas Company.

A pair of CP naturally aspirated, spark ignited natural gas engines, developing a total of 260 h.p., are installed at The Peoples Natural Gas Company, McKeesport, Pa. These units generate electricity to run water pumps cooling a bank of compressors, electricity for fan chilling the cooling water, and electricity for plant lighting and instrumentation. Operators report that these engines are easy to start, simple to maintain and respond promptly to load changes. Since their installation in September 1952, these CP Gas Engines have been rated as among the best engines of their type in the gas transmission system of this company.

CP Spark Ignited Gas Engines are available from 100 h.p. to 2000 h.p.

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

ENGINEER'S FIELD REPORT

PRODUCT RPM DELO OIL

FIRM C. H. LAWSON, INC.

Using RPM DELO Oil heavy-duty engines outlast equipment

C. H. Lawson, Inc. operates 78 pieces of road building equipment ranging from new to 15 years old, all using RPM DELO Oil. Only one engine has ever required major overhaul and that was not due to lubrication. Firm's chief mechanic, E. C. Miller, says, "RPM DELO Oil has been used exclusively in all our heavy duty engines since 1944. In many cases, it has enabled engines to outlast the equipment." Euclid Earth Mover (above) gets a push from a bulldozer to provide extra traction in wet earth.

TD 24 International (left), one of firm's 12 bulldozers, helps clear the way for a Route 50 by-pass at Riverdale, Maryland. This two year old tractor has operated more than 4,000 hours without engine repairs. Company owner, C. H. Lawson (right), reports that RPM DELO Oil keeps the engines in his equipment in such good shape that—regardless of operating conditions—they average approximately 4 years or 10,000 hours service before even minor repairs are required.

Why RPM DELO Oils reduce wear—prolong engine life

- Oil stays on engine parts—hot or cold, running or idle
- Anti-oxidant resists lacquer formation
- Detergent keeps parts clean
- Special compounds prevent corrorosion of bearing metals
- Inhibitor resists crankcase foaming

For More Information or the name of your nearest distributor, write or call any of the companies listed below.

LUBRICATING OILS RPM DELO

TRADEMARK "RPM DELO" AND DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20

THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

STANDARD OIL COMPANY OF TEXAS, El Paso

THE CALIFORNIA COMPANY, Denver 1, Colorado

With confidence and hard work, 1958 can be a good year.....

(*Continued from Page* 17)

Highway Transportation

Here we must consider movement of both people and things by buses and trucks respectively. Let's start with buses.

Buses—Of the 34,000 new engines predicted for the "Highway Transportation" category, about 3600 will go into buses. This will bring the total registered to about 40,000.

Diesel bus production has climbed steadily, if not spectacularly, for the past five years. Traffic congestion and parking difficulties in urban areas are encouraging greater use of mass transportation facilities. Also, the general migration to suburbia means extension of routes and facilities. Then too, the bus companies have been smartening up in ways to attract riders.

Figures from the American Transit Association show a growth in the percentage of transit passengers carried on city buses. The 1957 figure is placed at 65%. Since none of the factors contributing to increased production are expected to slacken, the 3600 figure seems realistic.

Trucks—Of the total predicted engine production, 30,400 units will go into trucks. This will include trucks for export and re-engining activity. Several indicators tend to justify this predicted boost over last year's estimate. These take two forms.

First, the proportion of heavy trucks (19,500 GVW and over) built per year in relation to total annual truck production has increased. From 1955 to 1956 the percentage jumped from 14% to 20%. When 1957 figures are in, further increase is expected. Also more of these trucks are diesels. Since 1946 the ratio of diesel to gasoline trucks in the big truck category has doubled to a little better than 20%. And it's growing.

The second factor encouraging diesel truck sales is the growing percentage of intercity freight being handled by trucks. The figure has climbed to 20% and proponents of trucking think that this will increase to 30% in the next 10 years. And by the end of 1958, there will be about 140,000 registered diesel trucks to do the job.

Municipal and Utility Use

Growth pattern of electrical energy usage is shown by a single statistic. Since 1950, total generation has just about doubled and now tops 600-billion kwh annually. There is no indication of a downtrend or even moderation in steepness of the curve. This effect is felt in all types of electrical power generation.

Steam plants produce the bulk of this power, with hydro plants second. First of the commercial atomic reactors has just gone into service at Shippingport. While diesels provide only a very small part of total generation, their role is important and could be even more so.

In municipal power plants, diesels are producing low-cost dependable power and benefiting the communities in many ways. These plants are faced with the same problem of rapidly increasing demand. Size of the new engines added attests this. It is not unusual to find that the latest engine installed has nearly the same capacity as all the earlier engines combined.

With demand steadily mounting, a corresponding need for more engines—and bigger ones—can be expected. Engines are performing other municipal jobs too. Water pumping and drainage control are common applications. In high-rate activated sludge sewage disposal plants, dual-fuel engines supply the power and compressed air, using sewage gas for the bulk of their fuel. Diesels are used in incinerator plants for dead-plant starting and to back up the steam plants.

Utilities can and do use diesels too. To illustrate some of the less-obvious applications, plans for a huge steam turbine plant included a high-horsepower diesel plant *just to compress air for soot blowing.* The principal use of engine power, however, is to solve problems of electrical distribution.

Decentralization of people and plants is a big problem if you have to supply them dependable power. Long feeders are expensive to string, are subject to losses and tend to be vulnerable to the elements. Mobile diesel-generator units are a practical answer.

Such units can back up single-line feeders and insure continuity of power. They can be used to boost end-of-the-line voltage. Another use is for peak skimming where power supplies are marginal. And, of course, they can provide a new flexibility for maintenance of distribution systems.

For emergency and disaster relief, they shine. Floods and such disasters are bad enough but the threat of ICBM'S is worse. Civil Defense authorities are re-evaluating their plans. The theory of evacuation seems impractical and talk is of going underground. Sweden has done it. In any case, power for disrupted essential services is vital.

We suggested in a September, 1957, editorial that C-D and the utilities might get together on this. Utilities would be encouraged, perhaps by rapid tax write-off or other form of subsidy, to acquire these versatile, mobile units. They could use them and maintain them. C-D would have first call in case of disaster. Utilities would have use of this mobile power pool in normal times and C-D would be assured a flexible power potential—all at minimum cost.

General Industry

"General" means just exactly that and consequently this is one of the most difficult categories to document. Where ever power is needed for an industrial application and use of a prime mover is indicated, you'll find diesels.

At the top of the installed horsepower list are the aluminum ore reduction plants with close to 850,000 bhp. Here, gas engines generate d-c electrical power for production of primary aluminum. From these huge plants, installations scale down in size.

Textile mills, processing firms of various kinds, refrigeration plants, etc., are some of the types of applications. Engines are used for primary power in many cases and, of course, standby uses are legion.

Communication facilities use a lot of engines. Many are remote—television and radio relay stations, aerial and marine navigational aids, radar facilities, etc.—and are often unattended. Development of automatic controls has done much to spur such installations. Standby power for telephone exchanges all over the country is another important use.

Numerically, at least, use as standbys accounts for the bulk of engine sales. Power insurance for mechanically refrigerated storage space, for hospitals and other institutions, for critical processes where power failure cannot be tolerated are some typical uses.

Finally, the versatility and portability of today's units makes them invaluable for miscellaneous power needs. With the available power takeoffs, torque converter and gear drives, they can be matched to any type of load. Adding up all types of application, a prediction of 25,000 units to be installed in 1958 appears justified.

Petroleum

As in the case of electrical power demand, demand for petroleum products is growing. API studies predict that 1965 daily consumption will be 80% above 1955 levels. From 1952 to 1956 there has been a cumulative increase of distillate fuels of 28.85%. In the same period, all diesel fuel usage was up 30%. Railroads used 31.6% more and on- and off-highway equipment consumed 60% more.

Yet we are predicting a somewhat lower figure, 5250 engines, for 1958 than we did for 1957. There are several reasons. Down on the Gulf, men tied in with the oil industry said that inventory of petroleum stocks was high —tanks were full. Some blamed the high level of oil imports. Others, perhaps more realistically, went back to the Suez crisis and last winter's mildness.

When the Suez Canal was blocked, machinery was put in operation to divert western hemisphere oil to Europe. When you start a flow of that proportion, you don't turn it off like a faucet. If you try it backs up. It is also true that last winter was milder than anticipated. Result —high inventories. This will tend to affect the market for pumping engines.

Pipelines use a lot of engines and throughput of petroleum products and gas will undoubtedly be higher in 1958. However, much of this will be handled by higher pumping pressures, generally involving additional booster stations, rather than with new pipe lines.

Exploration and drilling will continue about at current levels. Drillers have new and more efficient equipment for drilling, thanks to the crop of fine new diesel-electric power packages that are available. Faster operation and new standards in mobility will increase utility of these rigs and thus reduce costs.

The first rush for offshore drilling platforms has subsided somewhat and rate of construction can be expected to be somewhat slower. On the other hand, all sorts of marine equipment including self-contained power barges are being developed to service the platforms. This type of equipment is also in demand for drilling operations in inland waters. And diesels supply the power.

Mining Operations

Whether you are mining uranium or coal, diesel-powered equipment will be involved. No matter what means of bulk handling is devised to move the mined material, it has to be scratched or cut out of the ground. Then there is the loading and hauling to collection points. These are jobs for diesels.

Even if the average level of mining activity was to stay the same in 1958, more and bigger machines would be required. In basic mining industries, iron and copper for example, the richer ore veins are petering out. Processing technology is solving the problem of economic use of the lower-grade ores. But for the same net output, greater tonnages must be mined. Hence, more machinery is indicated.

Greater productivity per machine is needed to hold costs in line and larger, more-efficient machines are the answer. This trend is typified by the growing sizes of back and bottom-dump off-highway trucks. Euclids, for example, are up to 50-ton capacity with twin-engine drive. Dart has a 60-tonner and recently a 70-ton Marion Metal Products—Kenworth bottom-dump trailer-tractor combination was built for the coal industry.

Summing up, the anticipated high level of mining activity, larger volumes of materials to be handled and demands for greater productivity should absorb an additional 4500 engines in 1958. And when you get up to requirements of from 400 to 600 horsepower in a piece of equipment, it has to be diesel.

With the operational cost squeeze on, diesel power is the answer.....

Construction Equipment

The market for diesel-powered construction machinery is a tough one to rationalize. We have the greatest road-building program in history and total construction is at or near peak level. For 1957, new construction value was $47.2-billion of which roadbuilding accounted for $4.825-billion. Joint figures of the Department of Labor and the Department of Commerce estimate 1958 total construction at $49.6-billion of which $5.5-billion will be for highways.

Yet sales of equipment did not live up to this level of activity and we are predicting fewer engines for this service, 41,000 units, for this year. Why?

One answer is that there is a lot of difference between production and sales. A good many machines built last year wound up as inventory that is now being worked off. Obviously, production and sales were out of phase. This will probably be corrected in 1958 through somewhat reduced production.

The number of machines absorbed by the roadbuilding program disappointed many. Status of the program is variously reported. Governmental officials say that it is on schedule and certainly it is gaining momentum. Contractors and those who supply them look at it differently. Many contractors don't have the contracts they anticipated. Consequently, orders for additional equipment and supplies are not being placed.

There appears to have been a general under-estimation of the time that could be expected to be chewed up by design, land acquisition, financing problems, politics, etc.

Another item has affected anticipated equipment sales. ARBA Task Force studies (DIESEL POWER, October, 1956) estimated that contractors' equipment as of January 1, 1956 would support a program in the order of $5.4-billion.

This was based on a moderately higher utilization factor than the 49% figure for 1955 usage. The point is that additional equipment was deemed necessary only when annual work volumes exceeded $5.8-billion. The 1958 figure is $5.5-billion. So equipment sales in substantial volume will probably be deferred until the program shifts to a higher gear.

Other construction will account for the remaining $44.1-billion estimate. A drop-off is anticipated in the following construction areas: industrial; railroad; telephone and telegraph; sewage disposal; water supply; and conservation and development. Military construction was also anticipated to decline but recent events would make this somewhat doubtful. Other categories of construction, all where diesel-powered equipment is used, are predicted to offset the losses and boost the total by $2.4-billion.

Agriculture

Specialists in the farming industry expect that cash farm income from product sales and government payments will closely approximate 1957 levels, the best in some time. In the last quarter of 1957, farm tractor sales started an upturn. Much farm equipment needs replacement and this could be the start of such a program. However, some buying was probably spurred by attempts to get under the wire before anticipated price rises took effect.

From the diesel market point of view, we must not only consider total tractor sales but the percentages that are diesel-powered. Considering the farm-type wheel tractor, Bureau of Census figures show an increase from 11½% to 12½% from 1955 to 1956. This is on the basis of all sizes running down to 9 hp. Obviously, percentages would be higher in the larger types but the 12½% amounts to over 21,000 units. January to August figures for 1957 show that 16½% were diesel-powered.

Track-laying tractors are predominantly diesel-powered and 5350 units went into domestic farm use in 1956. Total figures for 1957, when available, are expected to show about 4950 units. Most logical explanation for this drop is that the availability of large diesel-powered wheel-type units, apparently preferred by farmers, is cutting into sales of crawler-type units.

Irrigation is becoming commonplace. Farmers are deciding that dependence on the weather is a risky thing. Tied in with this are land reclamation and conservation projects. And whether it be a huge project such as undertaken in Central and Southern Florida involving State and Federal Government or a farmer deep-well pumping to water his crop, it comes back to overall cost per foot-acre of water.

This is part of the cost of producing a product and as in manufacturing must be pared to the bone. That's where diesel economy plays a big part and why so many are used in this service. Farming has graduated from scratching out a piece of land and hoping for the best. Today, it is planned and controlled. Like any other business, greater productivity per unit cost is a major goal. Diesels in tractors, for water pumping and for the 101 other farm jobs will achieve it.

Dependable Power For Every Construction Application!

MERCEDES-BENZ
DIESEL ENGINES

The effortless performance and ultra-dependability of Mercedes-Benz diesels are the two most important qualities affecting the construction industry . . . Nothing is more important than keeping equipment on the job, working at a profit . . . The time-proven Mercedes-Benz diesel engine works on the 4-stroke principle with a pre-chamber combustion process assuring greatest possible quietness and smokeless combustion even under changing loads . . . Maintenance is simple, fuel consumption low and minimum space is required for installation . . . Engines are now available in ratings from 36 to 1385 h.p. to power practically every machine.

MODEL OM 312
79 h.p. at 2400 r.p.m.

Other Mercedes-Benz diesels available in 12 and 20 cylinders, Turbo and Supercharged, up to 3000 h.p.

UTICA-BEND DIVISION
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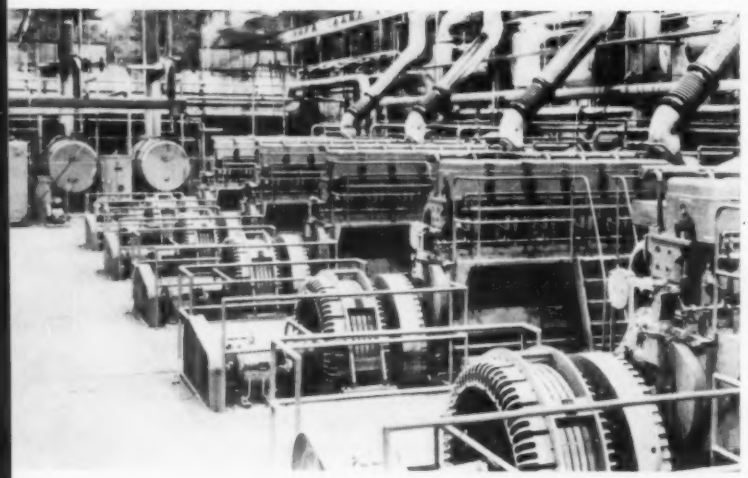


Radar warning network, flow of facts to SAGE Direction Center and transmission of orders to defense units rely on uninterruptable power from diesel-generator sets.

Five of six Nordberg diesel-generator sets in engine room of a SAGE Direction Center somewhere in U. S. Firm capacity of 2.5 guarantees power at all times. Electronic alarms stop units in trouble and automatically start others to take their place.

No Diesel Power - No Key Defense Systems

Key defense warning systems rely on self-contained diesel generator sets for uninterrupted power essential for their operation.

OUR defense warning systems against aerial attacks are as reliable as their source of power. This power must not fail. On-the-spot, self-sufficient, reliable diesel generator sets are filling this need.

Units of this type have consistently proven they can do the job with the exceptionally high safety factor required. An example is the recently completed installation at a key military base in the U.S. Sensitive components of the most modern electronic air defense system are housed in a large windowless building. It is one of many identical structures now being built at bases all along the perimeter of the country.

The highly-trained Air Force men inside have radar and voice communications with a vast network of observation posts. These men are only interested in objects thousands of miles away. Their eyes are continuously glued to the blink of a radar contact as it moves slowly across the luminous face of a radar receiving set.

These blobs of light indicate a jet aircraft speeding at over 600 mph. One of them could be carrying the nuclear bomb that could destroy your city.

The complex air defense system housed in this ring of windowless blockhouses is called SAGE (Semi-Automatic Ground Environment.) It's function is to collect, sort and memorize the thousands of facts about aerial activity gathered by observation posts. It can identify the planes and compute their speed, altitude and direction. These facts are summarized and presented so clearly, that the Air Force Officers at CONAD, Continental Air Defense Command Headquarters, are free to concentrate entirely upon making the decision—when and where to intercept the planes if they are hostile.

The amazing electronic equipment which makes this system possible was developed by Lincoln Laboratory of MIT. Western Electric Co. is the prime contractor for construction of six stations and installation of all equipment. Burns & Roe, Inc. are the consulting engineers.

Each blockhouse is a self-contained unit with its own independent power source. Six Nordberg diesel-powered generator units give a firm capacity safety factor of 2.5 to guarantee adequate power at all times. Engine operation is monitored by electronic alarms which sound a warning of trouble and start up another engine automatically.

A total of 36 Nordberg in-line diesels are being installed at the six stations. Each of these 4-cycle, 6-cyl, 13-in. bore, 16½-in. stroke supercharged engines is rated 930 hp at 450 rpm.

The diesel-driven Electric Products Co., 650-kw alternators develop 480-v, 3-phase, 60-cycle current for the computer and the many radar sets, plotting boards, radio equipment, lights, etc. All engine controls and switchgear were furnished by General Electric Co.

Now that the northern radar warning networks are complete, the air defense system of continental U.S. is capable of detecting hostile aircraft when they are still far from our country. Once a plane has been designated hostile, SAGE sends out a beam which our interceptors automatically follow to the attack point. SAGE also keeps track of the interceptors' fuel consumption and sends other planes to relieve them before their fuel runs low.

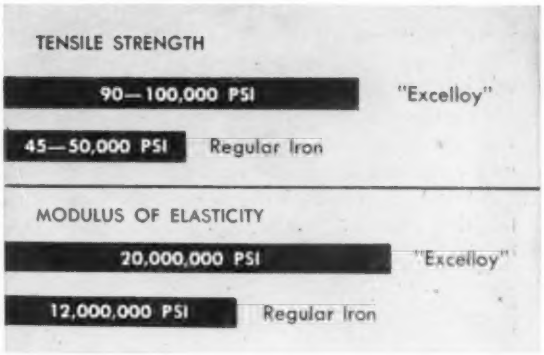
Pedrick Has High Strength Alloy Metal for Top Groove Piston Rings

Supercharging of large-diameter natural-gas and diesel engines is increasing because of the desire for more and more horsepower at minimum extra cost. This trend is evidenced both by the conversion of engines already in service and by the designing and building of supercharged engines at the factories.

Piston rings which are made of conventional piston-ring iron, and which are used in top-grooves of supercharged engines, frequently do not stand up under the heavy loading of high-output engines and breakage occurs. To prevent this, Pedrick uses a high-strength material called "Excelloy" which is centrifugally cast, highly alloyed and heat treated. This material is about twice as strong as regular piston-ring iron. The tensile strength is 90,000 to 100,000 compared to 45,000 to 50,000 psi. The modulus of elasticity is about 20,000,000 compared to about 12,000,000 psi.

The use of high-strength alloy to stop ring breakage in top grooves is a new development for high-output large-diameter engines. It has been thoroughly proven, however, by many years of service in heavy-duty engines used in trucks, buses and tractors.

Pedrick top-compression rings made of this high-strength alloy metal have an extra-heavy plating of chrome on the face which is pre-lapped or run-in at the factory to assure positive and quick ring seating for minimum break-in time.



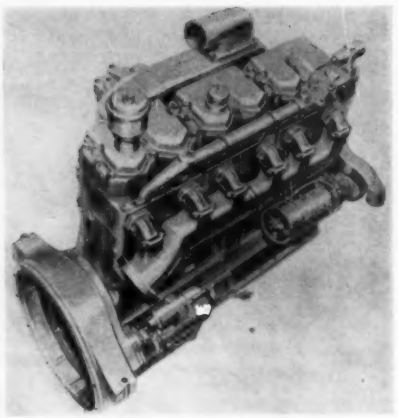
So, for greatest protection against top-ring breakage in high-output engines, for maximum scuff resistance, quick run-in and longest efficient life, specify Pedrick chrome-plated rings centrifugally cast of "Excelloy" high-strength alloy metal. WILKENING MANUFACTURING CO., Philadelphia 42, and Toronto 2.

Pedrick PISTON RINGS

PEDRICK PIONEERED *Conformable* RINGS FOR BIG-BORE ENGINES

Cummins' Latest - Model HF-6-B

New model fits between JT and HRF models and fills need for medium-horsepower, medium-torque, low-cost truck diesel.



Model HF-6-B, 6-cyl diesel weighs about 2400 lb. This weight includes all standard accessories.

IT'S specifically designed to meet the needs of truck operators in the Midwest, East and South. That's the word from the Cummins Engine Co. concerning the latest addition to their large family of diesels.

The newborn—the Model HF-6-B, rated 180-hp at 2100 rpm, has been designed for long life in heavy-duty trucking service. According to C. R. Boll, Vice President, Sales, this medium-horsepower, medium-torque engine has been developed from components of Cummins' truck diesels in greatest demand—the NH series.

The Model HF-6-B is basically the Model NH-6-B. However it has the 4⅞-in. bore, 6-in. stroke and 672-cu in. displacement of the proven Model H-6-B which is rated 150 hp at 1800 rpm. It was this engine that established Cummins as a definite factor in the West Coast on-highway truck market in the late 1930's.

Model NH crankshaft, block, connecting rod, piston pins, bearings, valves, and cylinder heads have been incorporated in the HF-6-B. These proven major components of the 200-335-hp NH series assures HF users of long engine life. Cummins records show that the NH series engines have consistently run more than 350,000 to 400,000 low-cost operating miles before and between major overhauls.

Use of replaceable, wet-type liners in the new HF-6-B is also expected to increase service life after rebuild.

The proven 4-valve (dual intake and exhaust valve) cylinder head which has been so effective in giving the NH diesels excellent breathing and fuel economy is doing the same for the new engine. According to Mr. Boll, the Model HF has an exceptionally low exhaust temperature when developing maximum horsepower. This is attributed to good scavenging of open-type combustion chamber and complete, clean burning of the fuel.

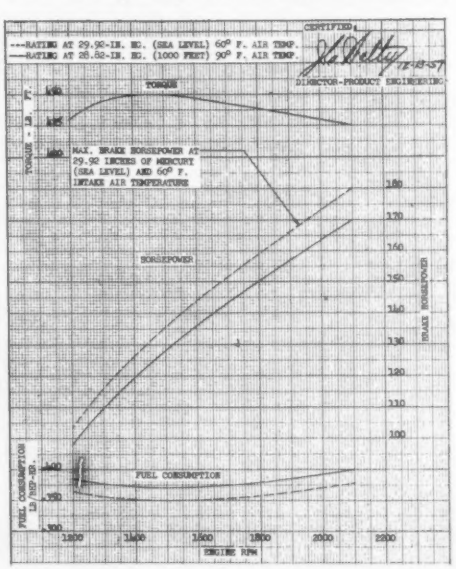
A low fuel consumption of 0.380-lb per bhp hr is the full-load, full-speed figure shown on the broken line curve. This figure, corrected for sea level and 60°F intake air is based on field tests and research. An even lower fuel consumption of 0.350-lb per bhp hr is obtained at about 1500 rpm. And this is well within the normal cruising speed range.

A good, flat torque curve can be seen which reflects the torque characteristics of the HF engine. Note that maximum torque has been held to 450-lb ft at 1500 rpm as compared to 606-lb ft for the NH series at the same rpm. This permits use of low-cost transmissions and drivelines which in turn cut initial cost of the trucks.

According to Cummins, registrations show that their engines power over 50% of the diesel trucks on U. S. highways. They have held this margin of the market for the last six years. The engines responsible for this are the Model JT-6-B, rated 175-hp at 2500 rpm; HRF-6-B, rated 190-hp at 2000 rpm; and the NH-6-B, rated 220-hp at 2100 rpm. The new HF-6-B, with its 180-hp at 2100 rpm fills the gap between the JT and HRF engines where a medium-horsepower, medium-torque, lightweight, low-cost engine was required to meet the load and road demands prevalent in the Midwest, East and South.

The HF-6-B engine has been in production since November 15, however, truck manufacturers are announcing its availability in January, 1958.

Horsepower and torque curves show performance obtained when operating on No. 2 diesel or furnace oil.


---RATING AT 29.92-IN. HG. (SEA LEVEL) 60° F. AIR TEMP.
——RATING AT 25.82-IN. HG. (1000 FEET) 90° F. AIR TEMP.
CERTIFIED
12-18-57
DIRECTOR-PRODUCT ENGINEERING
TORQUE
MAX. BRAKE HORSEPOWER AT 29.92 INCHES OF MERCURY (SEA LEVEL) AND 60° F. INTAKE AIR TEMPERATURE
HORSEPOWER
FUEL CONSUMPTION
BRAKE HORSEPOWER
ENGINE RPM

There's no substitute for the FORGED crankshaft

Crankshaft forgings illustrated, left to right, for V-8 passenger car, diesel truck and heavy tractor engines

Crankshafts have been made successfully by other methods of fabrication and have proven to be *good enough* for certain non-critical applications — but for maximum dependability of the modern, compact, high compression, high torque engine a forged crankshaft is essential.

The forging process assures, to the greatest degree possible, uniformity and predictability of physical properties with a minimum variance from piece to piece or from one location to another in the same piece.

Wyman-Gordon has been forging crankshafts since the beginning of the internal combustion engine era and today produces more crankshafts for a greater variety of applications than any other company in the world. In a crankshaft there is no substitute for a forging, and in a forging there is no substitute for Wyman-Gordon quality and experience.

WYMAN-GORDON COMPANY

Established 1883

WORCESTER 1, MASSACHUSETTS
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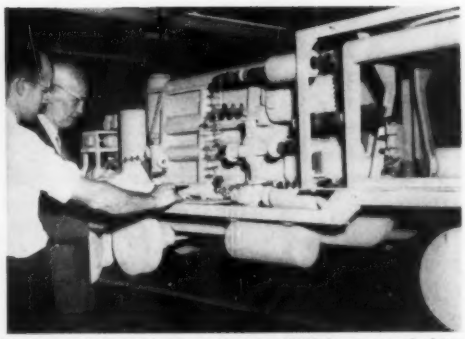
FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

Our new era—the missile age—opens up new power applications. The hardware for this new age starts on the ground and needs power. Here's one case where . . . . .



Model of Fairbanks-Morse unit shows 1200-hp, opposed-piston diesel engine driving the new type F-M rotary compressor.

Diesels Fuel Missiles

A STRONG offensive potential appears to be the best means of maintaining peace at the moment. And missiles of all types and ranges are at the top of our long list of offensive weapons. Missiles start on the ground and require ground support machinery. This means power—mobile, self-contained power. So missiles and all the new developments to come will be opening up new uses for diesel power.

Here's a specific case—a new trailer-mounted, diesel-driven, screw-type, Fairbanks-Morse, compressor used in liquid oxygen plants for fueling the Army's guided missiles. According to R. H. Morse, Jr., president of the Fairbanks-Morse Co., this unit, slightly modified, has broad application in a dozen major industries.

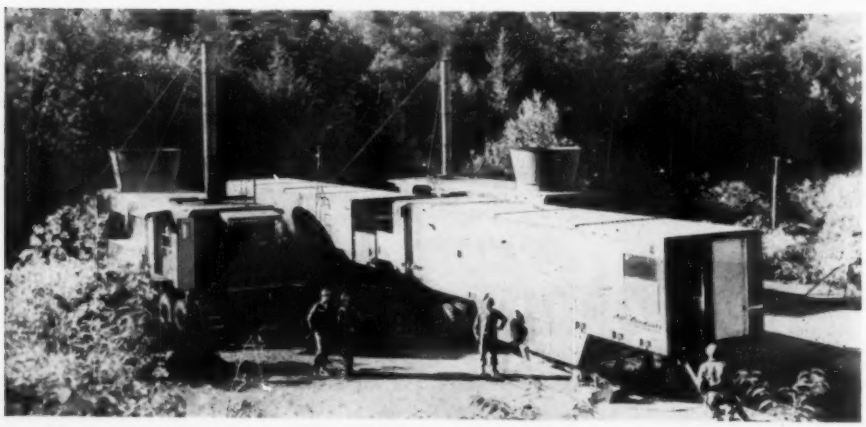
Its advantages of delivering oil-free air, light-weight and small size, make it desirable for commercial applications such as, chemical plants, oil refineries, food and metal processing, process refrigeration, natural gasoline plants and other process industries. It can also be used in heavy industries such as automotive and aircraft plants, shipyards, etc.; utilities, including power plants, sewage treatment plants, etc.; pumping natural gas; general industries such as glass, textile, etc; and research and test facilities of government and industrial installation, for example, wind tunnels and engine test.

Liquid Oxygen Plant

A run-down on how this unit is used for fueling guided missiles shows why it can be used on any applications using a compressor. Two of these diesel-driven units together with a pair of Air Products, oxygen distillation. units make-up a complete self-sufficient liquid oxygen plant capable of producing 20 tons of LOX a day.

At great heights where there is little or no oxygen for combustion, a missile must carry her own supply of oxident. LOX, an extremely cold, light-blue liquid produced and handled at 297°F below zero is the best oxidizing agent known. Large quantities of it are needed for a missile whether in flight or to keep it ready for launching. Extremely cold temperatures are needed to keep LOX in a liquid state or it boils away rapidly and can't be stored in any quantity for very long. Plus this, missile bases are prime targets and the bases and all supporting equipment must be able to move on short notice.

These problems were solved by the compact mobile plant which can produce 20 tons of 99.5% pure liquid oxygen



Army's new mobile liquid oxygen plant seen at test site can be airlifted to any part of the world although it's four times larger than any previously used. It will produce liquid oxygen within a few hours after arrival at launching site.

Soldier checks F-M unit during 1000-hr test. Plant was kept in continuous operation under combat conditions for more than 40 days.

per 24-hr day near any missile launching site. Four semi-trailers, each 30-ft long, 8-ft wide and 11-ft 2-in. high, house this plant. Fairbanks-Morse made the two air-supply units. Each included a heavy-duty 8-cyl, opposed-piston diesel rated 1200-hp at 720 rpm and a compressor capable of delivering vast quantities of air at 100 psi. This compressor is a new 2-stage, screw-type unit never before used in this country.

Each 50,000-lb, self-sufficient diesel plant needs only a supply of fuel oil. To eliminate need for external supply of cooling water, an extended-surface heat exchanger was built into the van. All fuel, lube and air filters, pumps and control equipment were built in. A generator is also driven by the diesel to supply electric power.

The two F-M compressors supply air to the Air Products Process vans which contain heat exchanger and air separation equipment. Air is fed into the 46,000-lb heat exchanger unit. Intensely-cold, by-product nitrogen passed back from the air separation unit, cools the air as it moves through these chambers and freezes out such impurities as water vapor and carbon dioxide. Air is periodically re-routed through alternate passages by reversing valves and check valves while these impurities are ejected by a blast of nitrogen. The air leaves this unit in almost a liquid state.

The 38,000-lb air separation unit completes the process of changing the cold compressed air into liquid oxygen and by-product nitrogen. In this unit, partly liquified air is separated from gaseous air by a centrifugal separator, sub-cooled and passed into the distillation column where the nitrogen is separated from the liquid oxygen by evaporation. The pure LOX is then drawn off and hauled to the missile site in special low-temperature, 9-ton trucks.

A key factor in the success of this complex LOX plant is the economy and efficiency of the equipment. Approximately 2 pounds of LOX can be produced for every pound of fuel oil used by the diesels. Eleven of these million-dollar plants have been ordered by the Corps of Engineers.

Mark Finely-Finished Surfaces Permanently Without Deformation

PERMANENT marking of finished surfaces has long been a problem. Surface breaches made by a dye on hard metals such as used for injection pump and barrels, etc., can't be tolerated. So, where there's a need for low-cost permanent marking free from distortion, burning or stress, electrochemical marking such as by the Electromark process will do the job.

This process works on the electroplating principle. The mark becomes a chemical part of the metal and can't be removed without removing metal. Plating solution is retained by an absorbent pad. When a stencil is placed on this pad and current passed through it, a mark is made on any conductive surface. Type of mark depends on type of current and electrolyte used.

Three types of marks are possible. (1) plated, (2) etched, (3) "ac". Equipment is designed to enable the operator to select the type of mark desired. All materials for this process are available from the Electromark Corp.

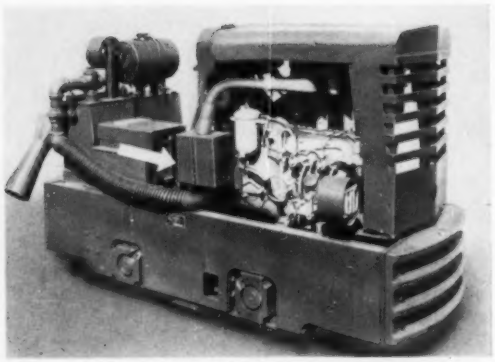
Plated mark—A metal of a contrasting color is plated in the form of the mark. Using a d-c source, the negative contact is connected to work. Plating solution is placed on felt pad and the electrode is connected to the positive pole of power unit. Pressing the electrode lightly on work gives a plated mark in the form of the open areas of the stencil.

Etched marks—A small amount of metal is removed from work surface. Leads from the d-c power source are reversed and the positive contact is connected to work. The negative lead is connected to the electrode and a special electrolyte placed on felt pad. An etch occurs in about one second when electrode is pressed on metal.

A-C marks—A stable oxide of a contrasting color is produced on the metal. This is most generally used in marking ferrous metals. One lead from an a-c source is connected to the work and the other to the electrode with electrolyte on it. On contact, a black mark results.

Underground Operation With Safety

Diesel-powered locomotive for small mine operations works underground without danger from exhaust fumes.



Arrow points to Dieseler catalytic purifier on Universal 1½-ton diesel locomotive. Water tanks for cooling exhaust gases at left.

A NEW underground unit has been added to Hack Engineering Company's line of Universal diesel locomotives. It is a 1½-ton unit which has been developed for small mine operations. The locomotive is very well suited for transporting material from drifts to main hauls and small tunnel driving projects.

Powered with an 18-hp, 2-cyl, 4-cycle, air-cooled Deutz diesel, the locomotive has a draw bar pull rated at 650-700 pounds. It is equipped with a hydraulic drive which permits equal speed and power in each direction of operation and gives gradual power which is so important in picking up a train load.

Hydraulic System

This hydraulic system starts at the hydraulic oil reservoir located behind the driver's seat. By gravity, the oil flows to the vane-type hydraulic pump which is directly connected to the diesel engine by a flexible coupling. The hydraulic pump then forces the oil under pressure through a hand-operated control valve. This control valve is a 4-way valve with a neutral position.

When the operator pushes the lever forward the valve channels oil to one side of a hydraulic motor. By entering the motor on this side, the oil forces the hydraulic motor to rotate in a direction to drive the locomotive forward.

When the operator pulls the lever back the oil is channeled to the other side of the hydraulic motor. This action reverses motor rotation and drives the locomotive in reverse.

In neutral position the valve allows oil from the pump to by-pass back to the reservoir. This permits the diesel engine to run without putting the locomotive in motion.

The hydraulic motor is direct connected by a flexible coupling to a speed-reduction gear box. The output shaft on the gear box is connected to the rear axle by means of roller chain and sprockets. The rear axle is connected to the front axle by roller chain and sprockets. This allows for both axles and all four wheels to drive the unit.

The hydraulic system has a maximum pressure of 1200 psi and approximately 18-gpm capacity. Normal operating pressure is from 800 to 1000 psi. A pre-set relief valve protects the system against damage due to excessive pressure.

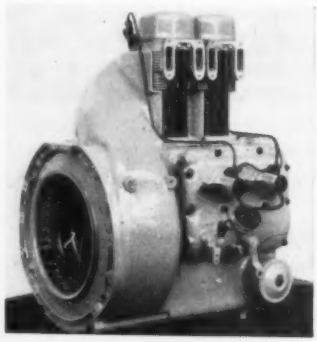
Exhaust Gas Purifier

Fumes from the Deutz diesel engine exhaust are removed by a catalytic purifier known as the Dieseler made by Oxy-Catalyst, Inc. It was introduced in 1954 as an effective means of reducing noxious and irritating exhaust fumes of 4-cycle diesels. This permitted these engines to be used indoors and underground without danger from the exhaust fumes.

Laboratory tests on Dieseler-equipped engines which have been loaded to simulate the work cycles of trucks, buses, tractors and locomotives show that the device eliminates 65-85% of irritating hydrocarbons and 80-90% of carbon monoxide. By catalytic action it oxidizes the hydrocarbons, carbon monoxide and other harmful contaminants in the exhaust gases into water and carbon dioxide.

The exhaust purifier consists of a heavy-gauge steel shell housing catalytic sections. Each section is a compact structure containing 73 porcelain rods coated with a catalytic agent. As the hot engine gases flow across these rods they are catalytically burned to carbon dioxide and water vapor. Because of the streamlined cross section of the rods, back pressure is negligible.

The purifier is attached directly to the exhaust manifold of the engine. After passing through the device, the hot gases are led by a flexible tubing and pipe into a water-filled tank back of the driver's seat where they are cooled.



Air-cooled, 18-hp. Deutz diesel engine powering underground locomotive has 650-700-lb draw bar pull.

DO YOU KNOW SUCH DEPENDABILITY?

The real test of dependability is not determined by performance on a single engine . . . or even a hundred. Leading manufacturers base their confidence in Robert Bosch Fuel Injection Equipment upon its consistent performance on thousands of their engines.

As a matter of fact, Robert Bosch has produced millions of Fuel Injection Pumps —a record unmatched in the industry. Our experience is at your service, now.

First in Gasoline Injection too!

Spectacular records in power, speed and economy have been achieved with Robert Bosch Gasoline Injection Equipment.

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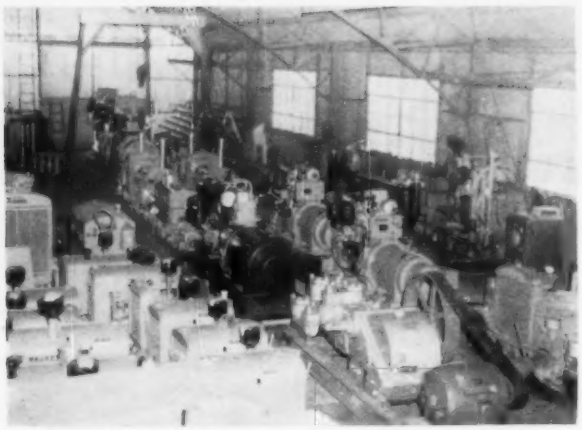
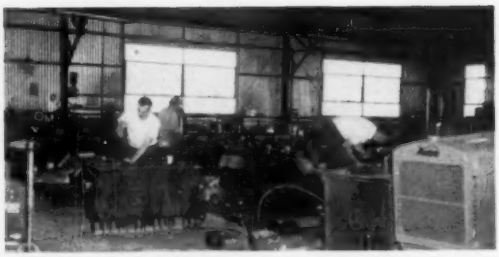




General view of shop area where engine repairs are made. Other operations are crowding this area but size of shop at new location will be large enough to handle all operations with ease.

Stock of new units which have been completed. Various types of engineered-pumping units are seen. Units are fabricated at left.

Customer Service Builds Sales

Reagan Equipment Co. of New Orleans, proves that sales and service go hand-in-hand. Their formula works for them—it could work for you.

"GIVE the customer what he wants and then take care of him." This is the formula for industrial equipment sales, expressed and practiced by Reagan Equipment Company of New Orleans. Tom Reagan, owner and president, claims that it's the reason that they are one of the largest Waukesha engine distributors in the country.

They are also distributors for Marion Power Shovel Co. This division of the company is sparked by N. Bourgeois, assisted by C. Thackston and M. Cornish. In conjunction with the Marion account, Reagan is distributor for the "Michigan Line", Construction Machinery Div., Clark Equipment Co., makers of diesel-powered, rubber-tired bulldozers, scrapers, tractor shovels, cranes and pulp wood loggers.

One might say that the potential for sales in the area accounts for the size of the operation. Of course, the potential must be there but it is not the whole story. Proof that the formula works is found in the growth of sales volume. It has increased substantially since Reagan took over the Waukesha distributorship.

Reagan has grown too, in fact, has outgrown their present location on the New Orleans outskirts. A new building with expanded and improved shop facilities, larger storage facilities and bigger parts department is being planned for across the river. They also have a branch in Natchez and another part of the organization, the Reagan Tool Company, has marine construction and repair facilities at Morgan City.

Mr. R. E. Bridges, Jr., vice president-sales, showed us around and supplied most of the data on their operation. Let's see how their principle of operation is applied.

Give the customer what he wants . . . .

Every customer wants a quality product, at a price he can afford. Proof that they are satisfied on both counts is seen in the good percentage of Reagan's repeat orders. Service records show that the Waukesha engines can take it on the job.

Beyond this basic requirement, customer needs vary. One wants just an engine; another wants a complete package of engine and driven equipment. Recognizing this, Reagan has an application engineer, Walt Lester, who can tailor a piece of equipment to the customer's requirements.

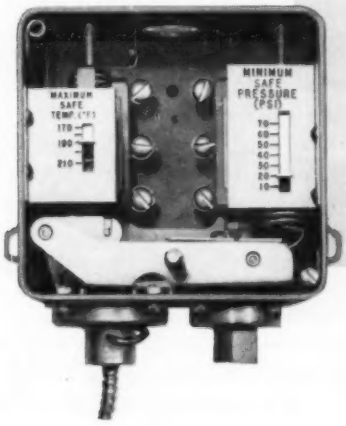
Out in the shop, over a third of the area is devoted to fabrication of sub-bases, special engine and machinery mounts and complete packages. Also, some standardized units have been developed to fill a need common to the area. Reagan builds these and has them available as shelf items.

Other equipment is designed and built to fit the customer's need. We saw generator sets in various sizes up to one using the Waukesha VLRDBS turbocharged, vee-type, 12-cyl engine with a continuous rating of 908 hp at 1200 rpm. Close to 50 of these engines have been sold in the area for different applications including some installed as marine propulsion units.

Pumping units of all types — from fire pumps to oil well mud pumps — were being turned out. One particular

(*Continued on Page* 34)

Temperature and pressure set points are inside the case, protected against accidental manipulation. Cover is removed for easy adjustment.



New Diesel engine safety switch

...gives fail-safe protection

This all-new Honeywell safety switch responds to abnormal pressure or temperature to stop or idle a diesel engine, or actuate an alarm circuit.

It combines separate systems for measuring engine coolant temperature and lubricating oil pressure. The temperature system includes an exclusive fail-safe feature, so that in case of damage to its temperature bulb, capillary or diaphragm, the switch responds as it would to excessive temperature.

Temperature and pressure settings can't drift off set points. There can be no false shutdowns due to vibration. Set points are easily adjustable in the field.

Your nearby Honeywell sales engineer will be glad to give you complete information about the new Diesel Engine Safety Switch. Call him today . . . he's near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pennsylvania.

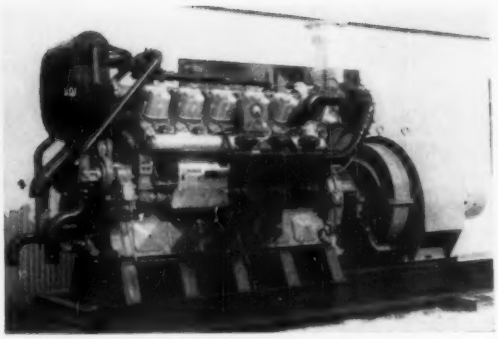
● **REFERENCE DATA: Write for Specification sheet S1010-5 "Diesel Engine Safety Switch."**

MINNEAPOLIS **Honeywell**
BROWN INSTRUMENTS
First in Controls

Customer Service Builds Sales

(*Continued from Page 32*)

Generator sets at right and fire pump (with radiator at left) are seen in rear of shop awaiting to be shipped to customers.



Waukesha ver-type, 12-cyl diesel engine-generator set alongside the shop is also ready to be shipped out.

pumping unit for unattended service is interesting and points up another phase of giving the customer what he wants. These are natural gas engines.

Operation over extended periods without attention was made possible by control devices. Two Ren products, for example, maintained crankcase oil level and cooling water level. The oil level regulator attaches to the side of the crankcase and controls flow of makeup oil from an auxiliary tank to keep the oil level constant.

The second device is a condenser (not applicable to diesels) that keeps the radiator full by condensing water vapor in the gas engine's exhaust. Cooling water temperature is controlled by a Kysor shutter arrangement.

Controls, in general, constitute a big area of customer preference. One may want the equipment to shut down when, say, water temperature starts to rise; another may not be able to tolerate shutdown except in the most extreme case and only wants visual or audible warning. Still another with a compound engine rig may want automatic disconnection of an engine in trouble.

Reagan uses standard control equipment in various combinations to get the desired result. So the customer can get either an engine or a complete package ready to go to work at his job and with the controls and protective features that he wants. This engineering service is a big factor in sales.

. . . . and then take care of him

Customer service includes parts availability and repair. There's also the angle of warranty — of standing behind the product. Industrial users expect and tolerate occasional difficulties but they want them taken care of fast. The first answer is a good stock of parts.

Reagan maintains a big part department in which they stock not only engine parts but parts for some of the more common driven equipment incorporated in their units. Stocks are maintained on a perpetual inventory system at levels dictated by usage and the lead time required to get the individual parts. Bobby Williams, parts manager, sees that the necessary parts and common stock are on hand. There is also a good sized engine and equipment inventory to maintain.

Buck Kirby is service manager, assisted by Henry Walle. As the shop stands, it is not indicative of the scope of work handled. Two reasons were given: The impending move to the new location and that a good deal of work is handled in the field.

Space requirements for parts and engine storage plus fabrication activity are now crowding the shop area. Their own storage problem is aggravating the condition. And, of course, no improvement work is being undertaken in view of the impending move.

Field work is something else. Much of Reagan's work is with oil well and drilling equipment in the inland waters and offshore operations. Equipment is heavy and transportation difficult. So the service men go to the site and do the work there. There are 20 men involved in service, one being an ignition and electrical specialist.

Service is available 24 hours per day, seven days per week. Ten repair trucks, all well equipped, are available for dispatch to where trouble exists. If it's on a drill barge, they drive to the nearest accessible point, transfer personnel, tools and parts to one of the rig's boats, and are ferried to the job.

Summary

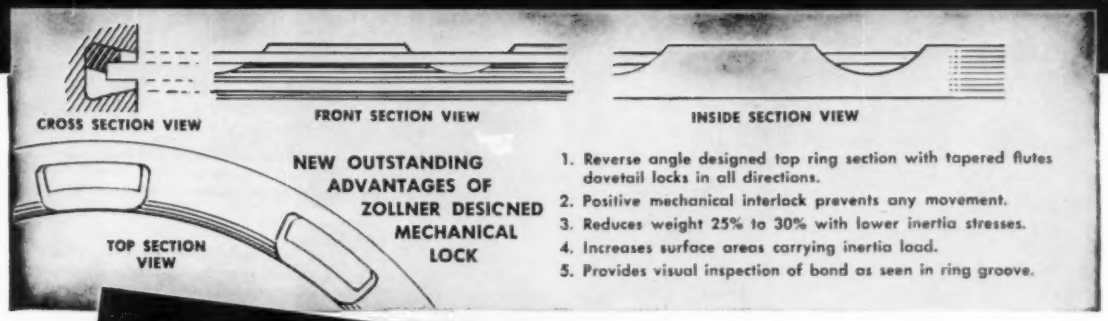
Customer service helps sell engines. Reagan's operation shows this. This service takes several forms. Availability of engineering and manufacturing facilities help the user get the equipment he wants, tailored for his job. He'll usually be glad to pay for a well-engineered job (he'd have to pay some one) and an engine is sold.

To keep the customer sold, he is assured of adequate and fast parts supply and service. They are as near to him as his telephone.

Reagan's formula is good business practice. The company sells engines, gets a return from their engineering and manufacturing services, holds the parts and repair business and gets one important plus — the customer's good will.

BOND-O-LOC* PISTONS

WITH "NI-RESIST" IRON TOP RING SECTION


CROSS SECTION VIEW
FRONT SECTION VIEW
INSIDE SECTION VIEW
TOP SECTION VIEW
NEW OUTSTANDING ADVANTAGES OF ZOLLNER DESIGNED MECHANICAL LOCK
1. Reverse angle designed top ring section with tapered flutes dovetail locks in all directions.
2. Positive mechanical interlock prevents any movement.
3. Reduces weight 25% to 30% with lower inertia stresses.
4. Increases surface areas carrying inertia load.
5. Provides visual inspection of bond as seen in ring groove.

Double Bonded
METALLURGICALLY Al-Fin Bond
MECHANICALLY Zollner Lock

STOPS!

RING GROOVE WEAR IN HEAVY DUTY SERVICE

"Sensational mileage" is the unanimous report of heavy duty engine builders and transport operators using Zollner "Bond-O-Loc" Pistons. Another great development by Zollner engineers, this super-mileage piston has a "Ni-resist" top ring groove section *permanently* incorporated with the *double* bond of *both* Al-Fin metallurgic *and* the exclusive Zollner mechanical lock. Separation failure is impossible. Ring groove wear problems are eliminated, blow-by prevented, oil consumption minimized, mileage to overhauls greatly increased. We suggest an immediate test of these sensational advantages for your engine.

Licensed under Patents 2,396,730; 2,455,457; 2,550,879
*T. M. Reg. Pat. App. For

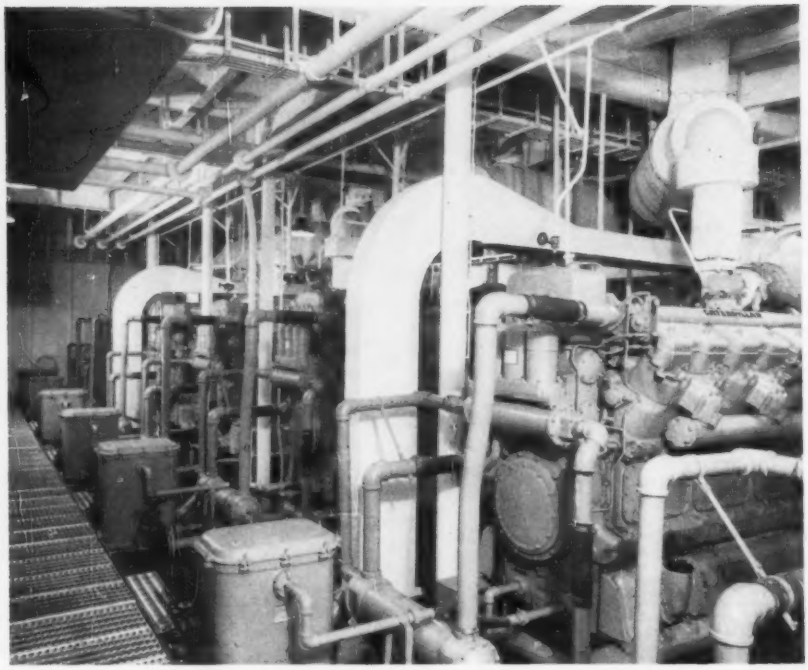
ADVANCED ENGINEERING
PRECISION PRODUCTION
COOPERATION with Engine Builders

ZOLLNER PISTONS

THE ORIGINAL EQUIPMENT PISTONS

ZOLLNER

ZOLLNER • Fort Wayne, Indiana



Same five Cat diesel-driven d-c generator sets that power the tender's marine propulsion motors also supply power for drilling.

Double-Duty Diesels in Drilling Tender

Tender's power plant propels it to platform and then supplies power for drilling operation.

A LOT of offshore oil wells must be drilled between now and 1960. It's the only way companies can hold concessions or leases which will expire in 1960 if they are not held by production. Therefore, a lot of offshore drilling activity can be expected in the next few years.

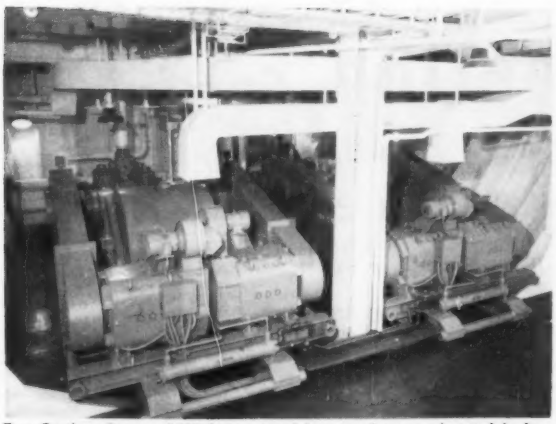
A recent study (American Iron & Steel Institute Bulletin 145. August 1957) indicates that by 1970, offshore drilling will bring in about 12 billion barrels of oil and 70 trillion cu ft of natural gas. Also, that about 600 wells would be completed in the Gulf of Mexico by the end of 1957 totaling over 5½ million ft. Average well depth would be 9700 ft, more than twice the national average.

This study indicates too, that by 1965, 1000 wells and 10 million ft will be drilled offshore annually. By 1970, 1300 wells will be drilled each year with footage totaling 5% of domestic drilling. Offshore drilling was only 2% during 1956.

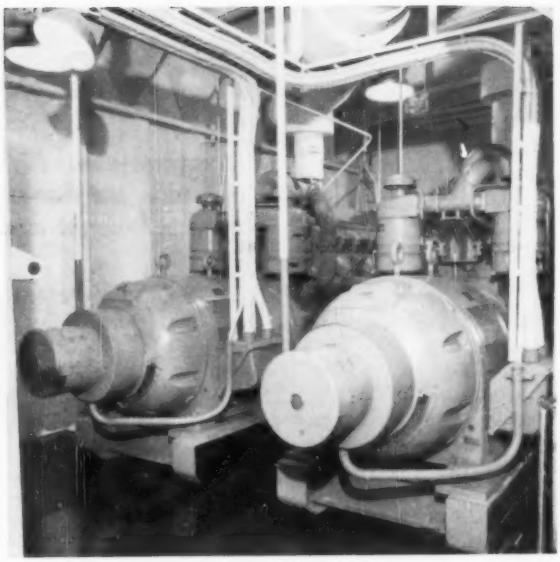
One outfit preparing to drill a lot of the offshore footage mentioned above is the Coastal Marine and Construction Corp. They've recently commissioned a new type of offshore-drilling platform tender having the mobility and seaworthiness of a conventional ship even during a hurricane. It needs no tugboat help even in rough weather.

Christened the "Howard S. Cole, Jr.," the new 3150-dwt ton tender has a unique dual-purpose, diesel-electric power plant developed by Caterpillar Tractor Co. and GE's Locomotive & Car Equipment Dept. Five turbocharged Cat D397, 500-hp diesels make full power available for both drilling and ship propulsion. This system eliminates need for additional propulsion machinery and the valuable space it would take up. It also permits the tender to drill until the last possible minute before a storm, then cast off from the platform and travel at 9 knots.

A GE oil well-drilling drive system provides the flex-



Two Gardner-Denver 1000-hp, motor-driven mud pumps located in bow of tender get power from double-duty Cat diesel-driven generators.



Two Cat diesel-driven alternators are located in the tender's main engine room. One is sufficient to supply all the a-c power needed on the tender and drilling platform. The other serves as a standby.

ibility necessary to transfer instantly the tender's power from drilling to propulsion. Each of the 500-hp Cats drives a GE-752-J1 differential-compound, traction-type, d-c generator. While operating on location, these units supply power to drilling equipment and 60-ton, deck-mounted crane. When the tender is moving between locations, power from these generator sets is redirected to drive the vessel's twin screws through two 600-hp GE propulsion motors.

During normal drilling operation, the generating sets, in varying combinations, power the GE-752-H2 shunt-wound, d-c motors driving all the drilling equipment on the tender and on a permanent platform. This equipment includes two Gardner-Denver 1000-hp, 880-gpm at 65-spm mud pumps in the bow, each driven by 600-hp motors at 900 rpm. Drilling equipment on the platform includes an Ideco E2500 double-drum, air-controlled drawworks on which are mounted two 800-hp motors. All these motors are controlled from a console on the platform.

Plus the five Cat-driven d-c generator sets, the tender engine room also houses two Cat D397, turbo diesel-driven 350-kw, 3-phase, 60-cycle, 1200-rpm, a-c generator sets. Only one is needed to supply all the a-c power required for the tender and auxiliary rig equipment. The other serves as a standby. These units power the tender air conditioning; tender and platform lighting; one 15 and two 10-hp, heavy-duty mud agitators; two bow-mounted 50-hp mooring winches; the 50-hp bow and stern anchor winches; two 125-cfm air compressors; and all pumping machinery in the main pump room.

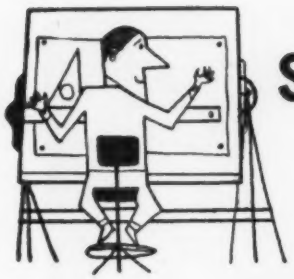
The all-welded-steel hull is 272-ft long, has a 56-ft beam and is 22-ft deep. The Texas deck aft forms a 56 by 60-ft helicopter deck. The 60-ton Clyde revolving crane forward on the main deck makes the vessel able to perform both construction and salvage work. It enables the tender to assemble and dismantle the drilling platform without help from a derrick barge. It also handles all drilling supplies.

The drilling platform is moved to and from location with a barge. All major drilling equipment on this platform as well as that on the tender was made by Ideco, Inc., one of the Dresser Industries. This equipment can drill deeper than 20,000 ft.

Another Cat-driven, d-c generator set identical to the five on the tender is located on the platform together with an auxiliary mud pump and control panel. With this equipment, a skeleton crew can perform all drilling operations needed to sustain a well when the tender is disconnected. Emergency lighting for the platform is provided by a 20-kw, a-c generator driven by a front power take-off on the Cat diesel.

The tender's service vessel, the 132-ft "Irwin W. Alcorn" was commissioned the same day as the "Howard S. Cole." This 297-ton (gross) cargo ship has a loaded capacity of 605 tons. Six cargo tanks integrally constructed into the hull and a reinforced cargo-carrying weather deck make this possible. These tanks, with a combined capacity of 3300 barrels, provide fuel oil and fresh water for drilling mud. A 10-ton crawler crane is located on the weather deck.

Two 500-hp Cat D397 turbocharged marine diesels power the ship at 11 knots through Snow-Nabstedt reverse and reduction gears. A power takeoff from the starboard engine drives one of the two main cargo pumps. The other is electrically driven. Two Nordberg 30-kw diesel generator sets provide all the electricity needed by the vessel.



service section

Recent engine and equipment modifications, procedures and recommendations straight from the different manufacturers to you

Cat Starting Engine Winter Lubricants

Part 1

Fuel oil viscosity recommendations for Cat starting engines with independent lube systems are detailed in Cat operation and maintenance instructions. However, as a general rule-of-thumb, the following recommendations can be used for crankcases and clutch compartments of all starting engines which have independent lube systems.

A. Use SAE 30 oil when ambient temperatures are above 32°F.

B. When ambient temperatures are below 32°F., use SAE 10W oil. SAE 10W oil is fluid enough for free circulation down to —10°F.

C. When temperatures are below —10°F it may be necessary to dilute the starting engine crankcase oil with kerosene. Just add enough kerosene so that the lube oil will be fluid enough to insure free circulation and easy starting.

In areas subject to sudden and severe temperature changes, it is advisable to always use SAE 10W oil in the starting engine crankcase and clutch compartments even though SAE 30 oil is used in the diesel crankcase. Also, if dilution of the oil in the starting engine crankcase and clutch compartment is necessary, evaporation of the lighter, more volatile kerosene may make it necessary to add kerosene periodically to maintain proper fluidity.

The oil should be diluted before stopping the starting engine. After diluting the oil operate the starting engine for a few minutes to thoroughly mix the oil and kerosene.

As an approximate check to determine if oil will flow, remove the oil level gage (dipstick) when engine is cold. If oil flows off dipstick, it is fluid enough to properly circulate in the engine and facilitate starting.

IH's New Exhaust Manifold with Two Outlets

A new exhaust manifold with dual-exhaust outlets has been released by International Harvester for their Model: U-372, U-406, U-450 and U-501 Power Units. This change will reduce temperatures in the exhaust and intake manifolds and will permit better all-around engine performance.

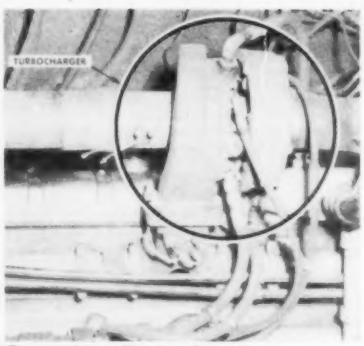
The above mentioned power units using the new dual-exhaust outlets are changed in that the engine hood (R.H.) is revised by providing another opening for an additional exhaust pipe.

The new improved parts listed are also made available as a field improvement package, 276 532 R91 for bringing up U-372, U-406 and U-450 power units up to date with the dual-exhaust outlets, if so desired.

Exhaust muffler attachment 276 533 R91 (for factory or field application) is released for U-372, U-406 and U-450 power units using exhaust pipe, 261 973 R1.

Exhaust muffler attachment 268 720 R91 (for field application only) is released for U-372, U-406 and U-450 power units built prior to the new exhaust manifold with dual-exhaust outlets.

Exhaust muffler attachment 276 357 R92 (for factory or field application) on U-372, U-450 and U-501 power units is revised in the quantity of mufflers required is changed from one (1) to two (2).



Cummins Turbodiesels

It is important to idle an engine 3 to 5 minutes before shutting it down to allow lubricating oil and water to carry heat away from the masses. This basic rule of good engine operation has been stressed in all Cummins operation manuals and is even more important with the release of turbocharged engines.

The turbocharger is the one unit containing bearings and seals that is subject to the high heat of combustion exhaust gases.

While the engine is running the heat is carried away by oil and water circulation, but if the engine is stopped suddenly the temperature of the turbocharger may rise as much as 100°F above that reached during operation. The results of the extreme heat may be seized bearings or loose oil seals.

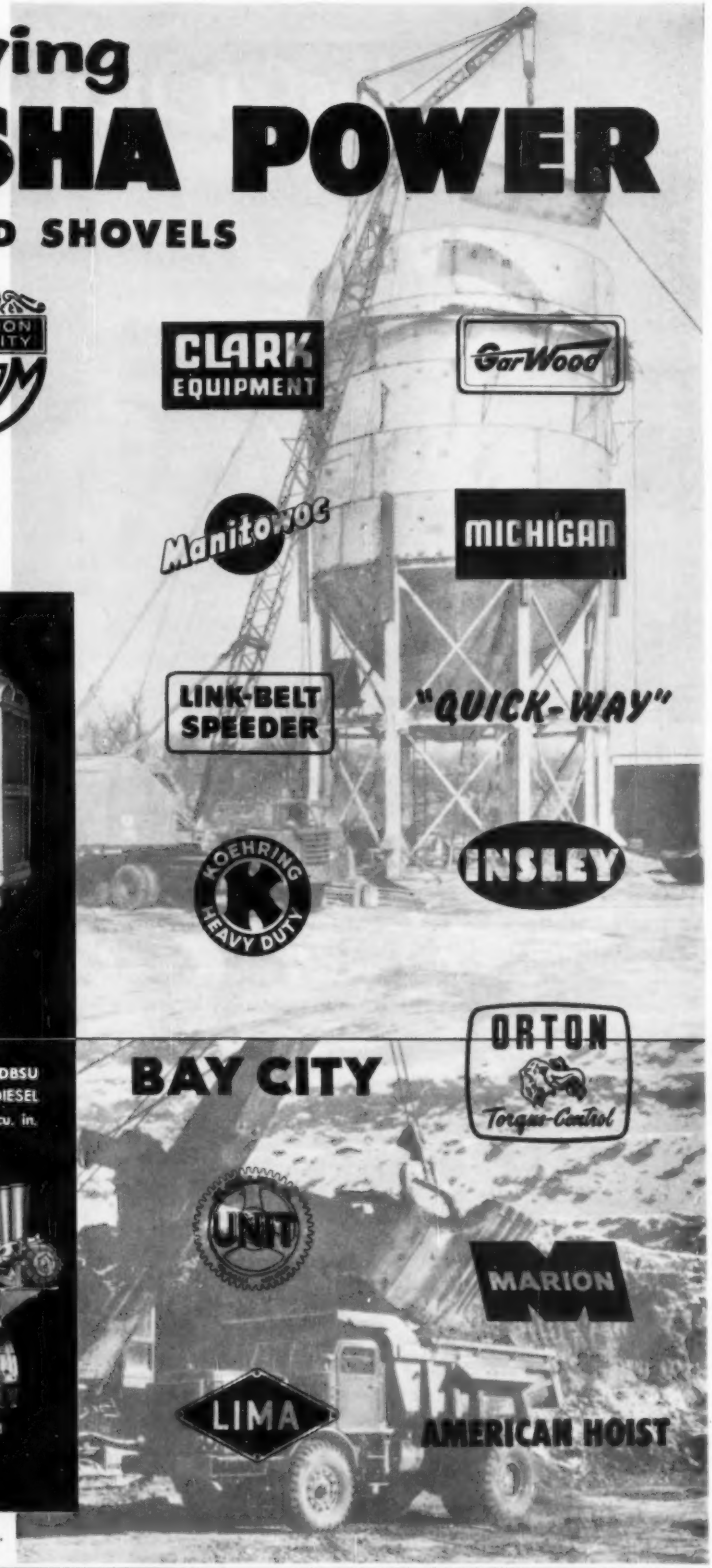
GM Hydrostarter Charging Kit

A new hydrostarter accumulator charging kit, J6714, has been developed for recharging the General Motors Hydrostarter accumulator, and checking existing precharge.

The kit consists of a pressure gauge and bleeder valve assembly that is connected to the nitrogen tank, a sufficient length of high pressure nose, and a Greer-type air chuck valve connector with a Schrader valve extension.

Profit-Paying WAUKESHA POWER

FOR CRANES AND SHOVELS



HANSON QUALITY HCDM

CLARK EQUIPMENT

GarWood

THEW Lorain

Manitowoc

MICHIGAN

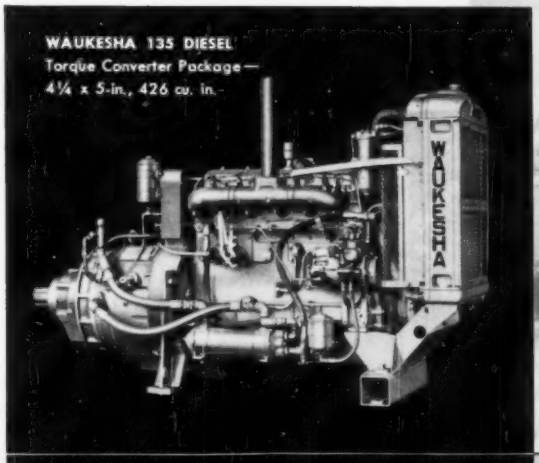
LINK-BELT SPEEDER

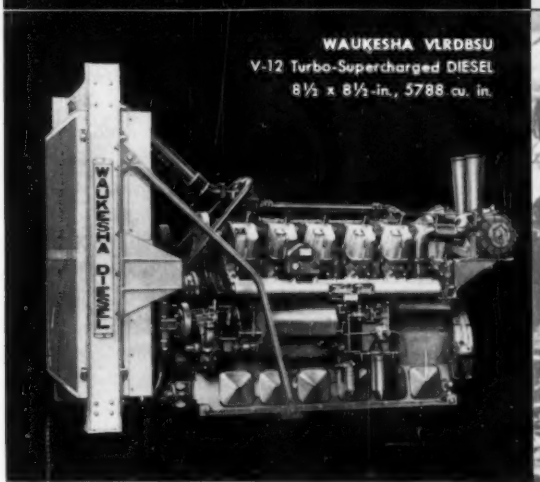
"QUICK-WAY"

KOEHRING HEAVY DUTY

INSLEY

360



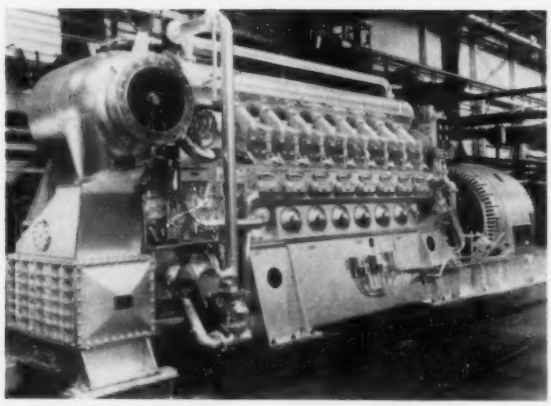


Complete size range to 1235 hp . . . all standard fuels.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

New York • Tulsa • Los Angeles

industry news



Ten Diesels Answer Power Demand In Havana

This is one of ten 2-cycle diesel-driven 2000-kw generator sets built by Cleveland Diesel Engine Division, GM, for Compania Cubana de Electricidad, S.A. Installed at the old Rinion de Melones plants, Havana, they will satisfy Cuba's increasing demands for electricity. All ten units are powered by Cleveland Model 498 turbocharged diesels. Turbocharging gives greater fuel economy and more power with very little additional weight compared with equivalent naturally aspirated models.

Payload Up, Costs Down

Thanks to a new rugged fleet of 17 Model DC 75 T Autocar tractors, A & B, Inc., Odessa, Tex. has upped total rock and sand payload by 15%. -And operating costs are down 20%.

"Autocars do in 10 hours what the same number of old tractors took 14 hours to do," says Don Page, A & B truck foreman. Each of the new Cummins-powered 180-hp units average 4000 to 7000 miles a month.

Replacement rate and repair bills are way down. Now they get 50% more miles per gallon than the two 1956 butane models still in the fleet. On the current 160,000-ton, 35-mile highway hauling job, President John Adams says he can bank on his Autocar fleet to pull 90 payloads over 6000 running miles each 10-hr day.

Tractors Travel Piggyback

Western-Gillett is making replacements in its carrier fleet for the "Sunshine Route". Here is latest group of advance design, lightweight White-Freightliners which went piggyback to their Los Angeles terminal.

These dual-drive tractors have a 234-in. wheel base and are used in dromedary service. All are powered by Cummins NHB diesels, equipped with Spicer 8045 main transmissions and 8035 auxiliary transmissions and Timken Detroit SQW dual-drive rear axles. Tires are 11 x 24.5.

On The Water Wagon at Amarillo Air Base

Parched desert fill for SAC jet base has this operator on the water wagon—converted International Harvester 75 Paywagon. Extra-high compaction needed for 1300-ft landing strip demanded lots of water — 40,000 gph of it. Two nozzle-equipped IH trucks did the trick.

Terra Construction Company used eight Payscrapers getting the 4 billion cu yd of sand there. Then the fill was compacted to 95% density by the IH water wagons. Each takes 5 minutes to load 5418 gallons — 10 minutes to unload. When the watering job is done, the units go back to normal bottom dump use.

new products . . Page 44

people and plants . . Page 48

new literature . . . . Page 50

Waukesha Buys Climax

The complete plant and assets of Climax Engine Manufacturing Company has been purchased by Waukesha Motor Company. As a result of this extension in low hp range, Waukesha now has complete coverage in power range of up to 1200 and a wider variety of engine sizes.

Besides an iron foundry, acquisition of Climax adds 160,000 sq ft of engine manufacturing space to Waukesha's 20 acres of floor space.

Exchange of sales, engineering and production methods between the two plants is expected to result in extremely efficient operation and increased service to customers.

Diesels Pinch-Hit in Panama for Hydroelectric Power

Drought in the Gatum Lake watershed may cost the Panama Canal $500,000 this year. Most of the money will go for fuel burned by diesels now taking over during a normal hydroelectric generation period.

Since ship traffic has been breaking all records, higher toll income may make up for the daily $2200 fuel expense. Usually diesel power is not used until the normal dry season there is half over.

Cummins Reports on Fuel Tax

Nine states in the U. S. and one province in Canada now have higher taxes on diesel fuel than on gasoline. This is just one of the significant facts pointed out by Cummins Engine Company Inc. in their booklet "Why Motor Fuel Taxes Should Be Uniform".

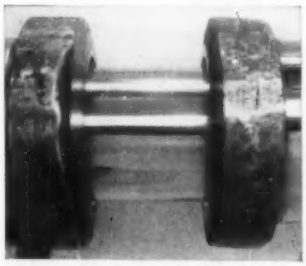
This report shows how differential fuel tax legislation adversely affects trucking. After recounting the many attempts to promote taxes on ton mile, weight-distance, axle mile, grade of fuel and other bases, it states there is only one fair method of taxing any and all highway users. This is the two-structure tax system—based on registration fees and uniform fuel taxes.

If you want a free copy of the Cummins Tax report, just say so on the post card supplied in this magazine.

THIS CRANKSHAFT JOB NEEDS A SPECIALIST

This is specialized work, rebuilding crankshafts—intricate, exacting, and naturally expensive. It's the kind of work that demands a specialist . . . and we are just that!
We've specialized in rebuilding crankshafts, because since 1916 we've *made* crankshafts. And who knows better than a maker what are the "musts" of a sound, economical repair job. We'll take your worn crankshaft and rebuild it, if salvagable, through the carefully controlled steps of grit blasting, replating, regrinding and thorough inspection. And we'll deliver it back with a guarantee for 100% performance that only a manufacturer-specialist can provide. May we quote on your next job?

For more details on crankshaft repair write for Bulletin RC-3



This is a finished, repaired crankshaft, after processing by National Forge.

NATIONAL FORGE
AND ORDNANCE COMPANY
Irvine (Warren County), Pa.

AiResearch Turbos Standard On A-C HD-21 Crawlers

Now standard on Allis-Chalmers HD-21 crawler-tractor is AiResearch Industrial Division, Garrett Corp., C-60D turbocharger.

The diesel powering the 45,500-ib tractor develops 225 hp at the flywheel. The AiResearch C-60D delivers 60 lb of air per min at the top of its best operating range through to the engine.

Major benefits claimed for AiResearch turbocharging are: increased power output; lower engine thermal loading, better specific fuel consumption, sea-level performance at altitude and decreased smoke and noise.

The turbochargers normally need no maintenance between regular engine overhaul periods.

ROCKFORD

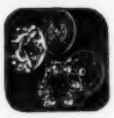
LONG LIFE Heavy-Duty POWER TAKE-OFF

NEEDS ONLY ONCE A YEAR LUBRICATION

The special, large Timken main bearings in the new ROCKFORD POWER TAKE-OFF are adjusted when assembled at the factory. They require no further adjustment—and run in a reservoir of lubricating oil that needs replenishment not oftener than once a year. The clutch throw-out bearing is lubricated for life and requires no further attention. Cut down on the servicing time needed by *your* equipment by specifying this new ROCKFORD Oil Field type POWER TAKE-OFF.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
1301 Eighteenth Ave., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.


Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

CLUTCHES

Oil Imports—How Much?

How much oil to import is a tough and controversial question. Some blame domestic crude inventory pile-up on imports, scream for controls. Voluntary controls are not getting support from all oil importers.

On the other hand, many blame opening of the Suez, plus warm 1956-57 winter and bad spring for driving for pile-up. All phases of domestic oil industry must be strong and ready for a real national security. Yet with 20% of proven world reserves, we consume 57% of crude produced.

U. S. lands are pretty well explored; foreign areas barely scratched. At this rate, time and increasing consumption may solve import question. With U. S. oil industry going full blast, we will still have to import. But on the short term view, we *must* keep domestic industry strong.

If there must be curtailment of imports, voluntary control is better than federal control.

Fairbanks Sales Score

Recent orders written by Fairbanks, Morse & Co. total 30 units. Of these, 15 Model 45C4-⅛, 10½-hp diesel generators will go to Vapor International Corp., Chicago. Two Model 49, 220 total-hp diesel driven pumps were bought by Albert Engineering Co., San Francisco. Two 3-kw Model 45B3-⅛ diesel generator sets were sold to P. S. Pell & Co., Ltd, Honolulu.

Other orders reported represent single units with horsepower ranging from 5¼ to 1920 hp going to 11 widely scattered customers.

Graduation at ALCO School

The 10th anniversary of ALCO Diesel Engine School was marked by graduation of 13 men from a 1-week course devoted to stationary and marine engines. Previous classes accommodated trainees on operation of diesel-electric locomotive power equipment.

In the past ten years the school has served more than 6500 students, including 500 from 17 other nations.

industry news

Worthingtons to Vietnam

Three Worthington diesels have been ordered by Compagnie des Eaux et d'Electricite to supplement power facilities in the Saigon area of South Vietnam, Indochina.

These SW-14 units each have 16 cylinders in vee-arrangement. Each develops 4000 hp at 428 rpm to generate 2865 kw per machine. They have a combined weight of 240 ton.

Installation when completed in the spring of 1958 will help meet increased power needs due to industrial expansion and population increases there.

AERA Guild Busy Turning Out Technical Data

Craftsmen's Guild of the AERA is functioning with renewed vigor. Publications put out by them are now spruced up in handier forms. For instance, answers to technical questions supplied by Guild members appear in indexed bulletin format for ready reference.

Progress Being Made on Truck Interchanges

Roy R. Smith, president of Smith Transfer Corporation, is working hard to bring about standardization of equipment and business methods so truck trailers can interchange as freely as railroad freight cars.

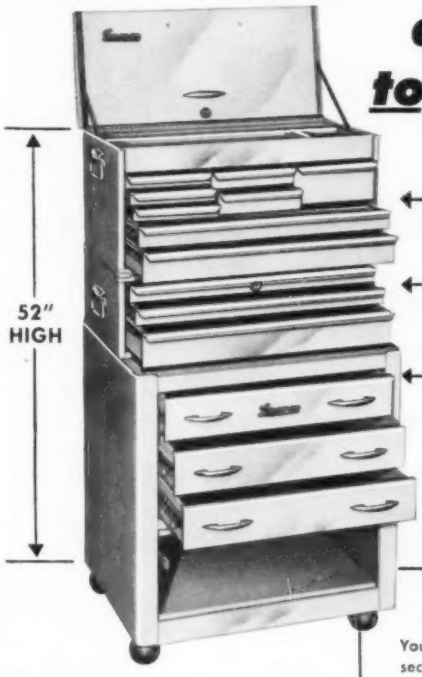
Some progress has been made. Roughly 95% of all common carrier lines do some interchanging today. Only 50% did so five years ago. But there's still much room for improvement.

Mr. Smith points out actually only one out of five of the 3,200,000 trailers operated by 2,000 ATA Common Carrier Conference members is used in interchange services. As chairman of the ATA Trailer Interchange Committee, he is determined to lift that figure to at least two out of five within the next five years. Committee members have been touring the U. S. spreading the truck standardization gospel.

(*Continued on Page 55*)

Now! a Snap-on Tool Chest

assembled to your order



KR-58A Tool Chest
$59.95*
26" x 12" x 14" high

KR-421 Drawer Section
$34.25*
26" x 12" x 8" high

KR-352 Roll Cab
$77.50
26¼" x 18" x 30" high

***Snap-on* KR-360**
Triple-Unit Tool Cabinet
$17.70* down $3.69 per week

*Slight variation in price depending on drawer selection. All prices subject to change without notice.

GET IT NOW ON *SNAP-ON'S* EASY PAYMENT PLAN

You can get the new chest, new drawer section and the roll cab individually, as a complete unit, or in any two-way combination. Any or all are yours on *Snap-on's* easy payments. Ask your *Snap-on* man for full details.

New Changeable Drawer Combination

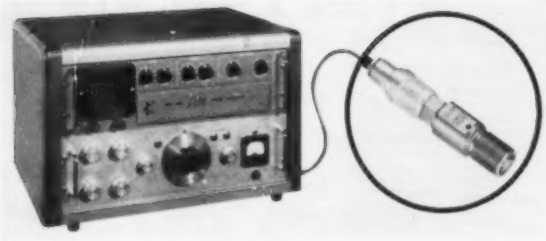
This new *Snap-on* tool chest (top section) with changeable drawer combination actually *lets you design your own tool chest.* You can select all deep drawers, all shallow drawers or a combination of deep, shallow, and medium-depth drawers — get just the right combination for your own particular tools. And you can make future changes to fit your needs.

The new *Snap-on* drawer (center section) is also available with the changeable drawer feature. Two shallow drawers can be substituted for the deep drawer or a deep drawer substituted for the two shallow drawers.

The *Snap-on* roll cab (bottom section) gives you a tool chest on wheels. And you get all the built-in quality of *Snap-on* chests — heavy-gauge steel, closely spaced electric spot welds, extra-strong internal bracing and supports. All drawers are non-sag, non-spill, easy-running units with full-width, roll-type pulls for easy opening from any angle.

SNAP-ON TOOLS
CORPORATION
8064-A 28th Avenue • Kenosha, Wisconsin

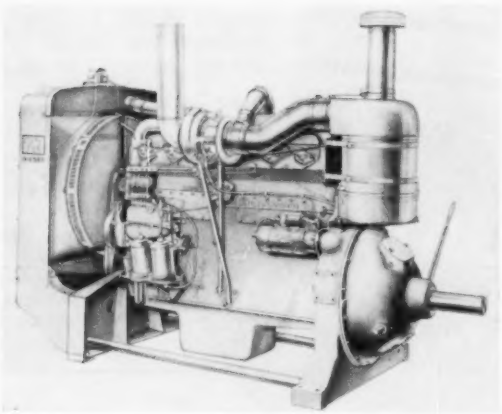
new products



Indicator-Analyzer Monitors Engine

Versatile new SLM Indicator-Analyzer, Series EA-114, directly measures all engine pressures and vibrations. Ignition systems can also be checked. This new Kistler Instrument Corp. product was designed for trouble-shooting, analyzing and setting today's engines.

Kistler's exclusive Swiss-made quartz crystal pressure pickup, used with various accessories and adapters, displays engine functions on an oscilloscope screen. Cylinder, manifold, injection and detonation pressures, pressure rise rates, engine vibrations and crankshaft torsionals are some items that can be measured.



Turbocharged Diesel Introduced by IH

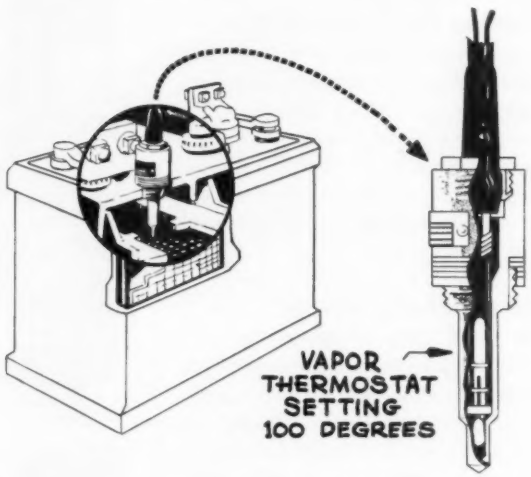
International Harvester bows into the turbocharged engine field with this new 6-cyl, 250-hp Turbotorque UDT-1091 power unit. This is 50 more hp than its naturally-aspirated counterpart, the UD-1091, till now top hp producer in the IH line.

Its exhaust gas-driven AirResearch turbocharger moves 60% more air through the 14-in diameter air cleaner. This big boost in air supply to the cylinders results in a cut in fuel consumption and higher power with lower exhaust gas temperatures.

Water-cooled oil temperature stabilizer is standard equipment on the new unit. The radiator has been enlarged to increase cooling capacity. The instantly-available 250 hp these features bring, plus an extra large counterbalanced crankshaft and heavy flywheel, IH states, assure stall-prevention at peak loads.

Power rating is on-the-project horsepower, the maker points out, and not factory testing lab rating exclusive of loads such as fan, radiator, accessories and altitude and air temperature differentiations.

Continuous duty rating of 200 hp at 1500 rpm gives users more production at less cost.

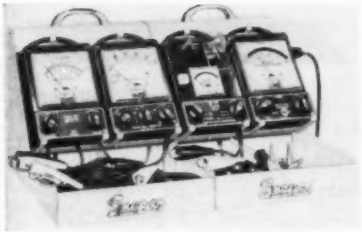


Thermostat Limits Battery Charging Temperature

To guard electrolytic solution in storage batteries from overheating because of high charging rates, Vapor Heating Corporation has introduced a battery temperature control. By keeping the solution temperature down, life of lead acid storage battery sets in diesel locomotives and other applications can be prolonged.

There are two parts to this new vapor battery temperature control — a vapor mercury contact thermostat set at 100°F and a bottle-type relay. The non-corroding thermostat tube in a plastic housing is threaded through an opening of a centrally located battery in the set. The sensing end of the thermostat dips about two inches into the solution.

When the battery solution reaches 100°F, the thermostat contacts close the relay circuit. In turn, this closes a bridge circuit around a portion of the voltage regulator resistance unit. The battery continues to be charged at maximum allowable rate while the solution is at 100°F, the control point.



Testing Set for LPG engines and Electrical Systems

Any mechanic after brief instruction can use the new LPG engine and electrical system tester made by Snap-On Tools Corporation. There's no need for computations or allowances. It's easy to adjust and connect.

The portable set includes a generator-regulator tester, tach-dwell meter, ignition analyzer, exhaust gas analyzer, 2 tune-up meter racks and a roll stand.

Illustrated instruction booklet accompanys each tester. Individual components of this Snap-On engine and electrical system testing set are available separately.

Road Test Recorder Now Doubles in Lab

Perfect Circle Corporation has developed an electronic road test recorder with playback components for dynamometers.

Four basic engine variables—rpm, manifold pressure, oil and water temperatures—are recorded on a single magnetic tape while the vehicle is road tested. The tape then is used to cycle a dynamometer. Thus, road operating conditions are duplicated in the laboratory. Playback equipment can also be used to cycle one or more engines.

A digital-analog comparative system eliminates drift during playback. Overall system accuracies with less than ½% variation from recorded data are claimed. When not in use to cycle a dynamometer, the unit may be used as a continuous data logging device. Greater or fewer variables can be recorded and by time multiplexing, many more variables can be logged.

It's NUGENT Lube Oil Filters
Below — Nugent Filters Fig. 1116PY-1R are in service on these buses.
for BIG NEW BUSES
CONTINENTAL TRAILWAYS

Nugent filters provide positive full flow lube oil filtering for the diesels powering these recent additions to Continental Trailways' luxury bus fleet.

The top photo shows the latest concept in bus design. It's the 60 foot long, articulated *Academy Express,* which takes its name from the new United States Air Force Academy at Colorado Springs, one of its stops on the scenic Pikes Peak Route.

The lower photo illustrates Continental's *Golden Eagle* coach. Nearly 50 buses of this model are now in service with their vast luxury fleet.

Both the *Academy Express* and the *Golden Eagle* offer hostess service, refreshments, rest rooms . . . all the extra touches of first class highway transportation.

Just as Continental's passengers enjoy the ultimate in highway travel luxury, the American-Built Cummins horizontal diesels powering the *Academy Express* buses and the M. A. N. diesels aboard the *Golden Eagles* are provided with the finest in filtering protection . . . NUGENT FILTERS.

Nugent Full Flow Filters will filter all the lube oil in circulation every cycle. Models capable of removing foreign solids as small as 2 microns are available.

If your equipment demands this type of treatment, now is the time to investigate the advantages Nugent filtering offers you. Write for complete information, outlining your requirements.

ESTABLISHED 1897

REPRESENTATIVES IN PRINCIPAL CITIES

WM. W. NUGENT & CO., INC.
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You have many advantages when you buy from the COMPLETE line of Viking rotary pumps —quality controlled from beginning to end.

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Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps

See our catalog in Sweet's industrial construction and plant engineer's file.

Fits Any Engine Of Your Choice!

KATO

GENERATORS UP TO 500 K V A!

In the Kato line of generators there is a size with all the electrical characteristics to meet your specific requirements. By means of one of Kato's flexible steel disc type or bonded rubber couplings, Kato generators adapt to all engines with S.A.E. Bell Housings. Easily connected to any diesel or gasoline engine. Standard frequencies—25, 50, 60 and 400 cycles plus many special frequencies to 1200 cycles, both fixed and variable. 400 cps to 250 KVA; 60 cps to 500 KVA. Single, standard two bearing or two bearing close coupled design. Orders for special generators to fulfill specific needs or uses are especially welcomed.

ALSO MOTOR GENERATOR SETS Wide variety of both fixed and variable frequency ranges start at 25 cycles, up to 1200 cps. 400 cycle line to 250 KW.

BUILDERS OF FINE ROTATING ELECTRICAL MACHINERY SINCE 1928

Input 60 Cycles
Output 400 Cycles

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new products

Air Impact Wrench

Albertson & Company, Inc. have designed two new air impact wrenches. Sioux Model 315 delivers 130 ft lb torque in 10 sec; Model 317 delivers 185 ft lb torque in 10 sec. Both weigh 5½ lb.

Powdered-iron bearing surfaces on motor end plates give long wear and insure close air seal. Fewer moving parts and less metal-to-metal friction result from simplified design.

A power regulator permits running a series of nuts down to same degree of tightness. Setting No. 5 gives full power to blast loose tight, rusted or frozen nuts. Only a 180-deg turn is needed to vary power setting No. 5 to No. 1.

Versatile Steam Cleaner

Blast-Master is the name of this new 280-gph steam cleaner announced by Clayton Manufacturing Company. Self-contained and fully automatic, it is equally effective for light, medium, heavy or extra heavy cleaning.

Fleximatic control feature automatically regulates fuel to burner and water flow to coil, permitting operator to use all or any part of the 280-gph capacity from one or even two guns.

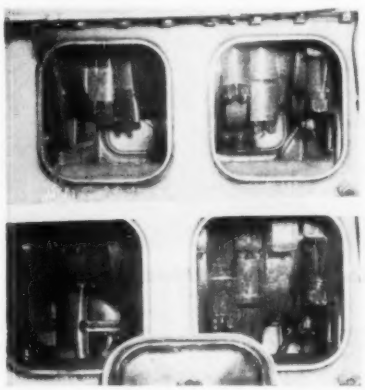
Vapor expansion is controlled for a concentrated, high-velocity delivery through a Clayton vacuum nozzle, providing high impact for heavy-duty industrial cleaning.

new products

For Internal Cleaning of Railroad Diesels

An internally cleaned engine insures adequate oil flow to vital areas, eliminating parts wear and failure. Magnus Chemical Company has developed chemical cleaner RR-737 for sludge removal from locomotive engines without dismantling any parts.

Company field tests vouch for its efficiency in getting rid of lacquer-type and soft deposits from crankcase, oil passages, oil coolers, filter compartments, piston ring grooves and working surfaces of moving parts on top deck.



The lower photo is the "before" example and the top shows the same Alco diesel after using this non-corrosive desludger.

There's a bulletin giving step-by-step procedures to follow in desludging RR engines with Magnus 737. Use the postal card in the back of this magazine to ask for your copy.

Tank Heater for Diesels

For pre-heating truck and tractor engines, Phillips Manufacturing Company introduces the Zero-Start U-5000 tank heater.

Low wattage required by this new external heater gives economical operation even over extended periods of use. Long-lasting, quick-acting extruded heating element operates from 115-V ac or dc current. Connection is made to an engine's block drain.

For Overcoming Power Loss At High Altitudes

With the Normalizing Kit introduced by Caterpillar Tractor Co. you can avoid reduction of diesel horsepower operating at high altitudes. It overcomes the cause of such power loss—insufficient oxygen for complete fuel combustion.

This new kit has a turbocharger and all manifolds and adaptors needed to mount it on the tractor engine. The turbocharger delivers air to the inlet manifold at greater than atmospheric pressure. This permits complete fuel combustion and produces sea-level horsepower up to 10,000-ft altitude.

The Cat kit does not increase the sea-level hp, but provides needed oxygen to burn the same amount of fuel at high altitudes as at sea level. Thus, a normalized D8 tractor at 8000 ft will operate at the machine's sea level rating of 191 hp. Capacity of a standard D8 at the same altitude would be only 151 hp.

(*Continued on Page 57*)

The World's Leading Manufacturers of

FUEL INJECTION EQUIPMENT

for Diesel Engines

Depots and Service Agents in over 100 countries

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Canadian Distributors:

Joseph Lucas (Canada) Ltd., Head Office: 11 Davies Avenue, Toronto 8, Ontario

Branch Office: 3401 St. Antoine Street, Montreal 30, Que.

AP174-819

people and plants

Heads Burmeister & Wain Sales

David C. Graham has been appointed sales manager of Burmeister & Wain American Corporation.

He has had extensive experience in the marine power field and for the past ten years served as sales engineer for Nordberg Manufacturing Co. Just before taking up his new duties, Mr. Graham completed a 7-week tour of the parent company's plants in Denmark.

David C. Graham

Horace G. Trainer

Fills New Sales Post At Cleveland Diesel

Appointment of Horace G. Trainer to the newly created position of Assistant general sales manager of Cleveland Diesel Engine Division. GM. is announced by K. O. Keel. general sales manager.

A member of the American Society of Naval Engineers, Mr. Trainer first joined Cleveland Diesel in 1934. Before this promotion he served as executive engineer.

Indiana CFC Sales Post

Charles L. Wallace, vice president of Indiana Commercial Filters Corporation, announces the appointment of Graham C. Thompson as sales manager of the Michiani Division in Lebanon, Indiana. He fills the post of Robert N. Burckhalter now retired.

Mr. Thompson has been with the company since 1949 except for two years duty in the Navy.

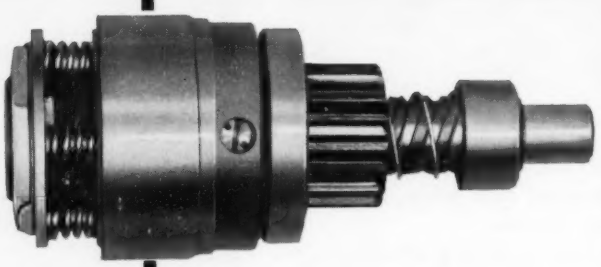
Graham C. Thompson

for

PERFORMANCE
ECONOMY
DURABILITY

specify

BENDIX STARTER DRIVES



In starter drives BENDIX means QUALITY. That fact, accepted by automotive men for almost half a century, is just as well-known to diesel engineers today. That's why the Bendix* Starter Drive is standard equipment on more diesel engines than any other make. It can be mounted more easily and in more positions. It requires no actuating linkage—the solenoid can be placed in any convenient position. It is simple in design, has fewer parts, needs fewer adjustments. No matter what your type of diesel, you'll be wise to specify and demand the Bendix Starter Drive for outstanding performance and economy. *REG. U.S. PAT. OFF.

Bendix-Elmira, N.Y.
ECLIPSE MACHINE DIVISION

Bendix
AVIATION CORPORATION

GRIND CRANKSHAFTS IN THE BLOCK!
The Winona lathetype Crankshaft Grinder has given fast, accurate service in the Automotive field for over 18 years. Now it's available to the Diesel field. With a new large hook, the standard grinder will now grind shafts up to 3½" in diameter in the block!
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WINONA TOOL MFG. CO.
WINONA, MINN. U.S.A.

KIENE® DIESEL
PRESSURE INDICATOR

gives compression and firing pressures faster

SIMPLE
RELIABLE
COMPACT

Send for Bulletin K-100

The Model K-100 Kiene Pressure Indicator accurately measures compression and firing pressures — assures the proper maintenance of diesel engines — helps prevent costly down time. Only one moving part — no friction or inertia effects — no complicated adjustments.

KIENE DIESEL ACCESSORIES, INC.
10352 PACIFIC AVE., FRANKLIN PARK, ILLINOIS

Robert D. Sutherland

Morgan Washburn

New Branch for C. Lee Cook

C. Lee Cook Company, Division of Dover Corporation, has opened an office and warehouse in Los Angeles at 1341 South Hope Street.

Robert D. Sutherland has been appointed branch manager. He has served such firms as Worthington Corporation, Ingersoll-Rand and Ralph M. Parsons Company.

Morgan Washburn, who has been Cook's California agent for thirty years, is retiring. He will continue association with the company as consultant.

Changes At Fairbanks, Morse

Robert H. Morse, Jr., president of Fairbanks, Morse & Co. announces several personnel changes.

W. F. Wahlenmaier will take over as manager of the New Orleans Branch when Page S. Procter retires at the end of this year.

Milo C. Roy will step in as manager of the Portland Branch till now directed by Mr. Wahlenmaier.

W. B. Morse has been promoted to manager of the Chicago office.

Dresser-Gardner Merger Dropped

Proposed merger of Dresser Industries, Inc. and Gardner-Denver Company has been amicably withdrawn. Differences in management approach is the reason. H. N. Mallon, chairman, said Dresser places major responsibility at the operating company level while Gardner follows centralized authority and control. Dresser intends continuing its policy of decentralization and diversification, Mr. Mallon stated.

In Memory

Johann M. Fischer, one of our eminent diesel engineers, passed away at the age of 71 on November 16.

He was associated with the Lanova Diesel Engine developing group both in Germany and New York. Other companies he served included Buda Division of A-C, Nordberg Manufacturing Co. and J. I. Case Co.

Mr. Fisher was an active member of the ASME and will be remembered as a master in the diesel development field.

Top Rank Changes at Waukesha

New executive line-up at Waukesha Motor Company is announced by James E. DeLong, president.

Elected executive vice president is Charles E. Nelson, Jr. Newton H. Willis is named vice president of engineering. The new secretary-treasurer is Lewis W. Youker and Joseph J. Kleinbrook is assistant secretary-treasurer.

new literature

Covers All IH Construction Equipment

The entire line of International Harvester's construction units and attachments is covered in a new accordion-type folder. It serves as a ready reference for crawler tractors, Payscrapers, Drott skid-shovel, 4-in-1 bucket line, towed-scrapers and other units.

Brief specifications are given for each rig. It also includes data on the latest additions to the carbureted power unit line, V-8 units, UV-549, UV-401 and UV-461 models.

Another IH Booklet just published is a 16-page piece on Payscrapers. Diagrams, cutaway views and photographs help describe Models 55 and 75. Features listed include "boiling action" into the Payscraper bowl, blade interchangeability, Hydro-Steer for easy operation and 3-deg forward spindle pitch to prevent nose dive.

Stand-By Power

Diesel-driven generating sets for emergency use are described in a new folder by Katolight Corporation. Points to consider in selection of a stand-by power plant are covered. Specifications are given for diesel electric generating equipment to 500 kva.

For Clarifying Fuels and Fluids

Commercial Filters Corporation has just published a catalog on Fulflo and CFC filtration equipment for micronic clarification of lube and fuel oils, natural gas, compressed air, hydraulic and other fluids.

Filters are designed for high or low flow rates and pressures. Container metals and elements allow for handling solutions of varying pH, temperature and viscosity. Fulflo Filters all employ honeycomb filter tubes in single or multi-tube arrangement. A wide range of densities allows for filtration to any desired degree of micronic clarity.

Models are included for full-flow filtration and by-pass applications. for filtration of dissolved as well as solid impurities.

Torque Specification Chart

A revised bolt, nut and stud torque specifications chart, Form 7SE 138, applicable to all series Detroit Diesel engines has been prepared. The new chart has been expanded to include specifications for 2 and 4-cyl Series 51 and 3, 4 and 6-cyl Series 71 aluminum engines.

Application of proper torque is essential in assembly and servicing. This chart will serve as a useful tool in developing and maintaining dependable and satisfactory service procedures for Detroit Diesel engines.

L O O K

for this SIGN

ASSOCIATION of DIESEL SPECIALISTS A·D·S

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THE BEST IN WORKMANSHIP AND MATERIALS

Look for the MEMBER SHOP in your vicinity—
ONLY THE BEST CAN QUALIFY

Interested in the Association's work? Plan now to attend the open Technical Sessions at the next meeting, Shamrock Hotel, Houston, Texas, Feb. 13-16, 1958.

ASSOCIATION of DIESEL SPECIALISTS, INC.
For information contact: S. E. Franklin, Secretary
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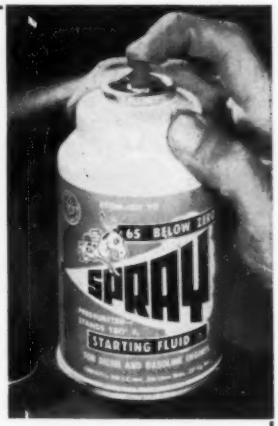
Quick starts down to

65 DEGREES BELOW ZERO

for Diesel and gasoline engines



SPRAY STARTING FLUID, with the propellent used in the pressurized can, insures quick starts for Diesel and gasoline engines in temperatures as low as 65° F. below zero and withstands 180° F. heat. This combustible propellent was developed after two years of research. SPRAY STARTING FLUID pressurized with our inert propellent is absolutely safe and odorless in storage.

SPRAY STARTING FLUID is sold through distributors, wholesalers and their dealers located throughout the United States and Canada.

SPRAY PRODUCTS CORPORATION

P. O. BOX 584 • CAMDEN 1, NEW JERSEY

Training Films On Anti-Friction Bearings

Truck maintenance men will want to know about the sound slide color films now available on oil seals, ball, roller and engine bearings. Produced by Federal-Mogul Service, these "Guide-Films" are part of an educational program for proper installation and maintenance of anti-friction bearings.

Vee-Angle Compressors

Cooper-Bessemer Corporation has released a bulletin on their new vee-angle type GMXF compressors. It describes parallel turbocharging of engine-driven compressors from 330 to 825 bhp for field gathering repressuring and refinery service. Complete space plan diagrams are included.

Dodge Vee-Belt Drives

Anyone concerned with power transmission problems will want a copy of the revised comprehensive manual on vee-belt drives by Dodge Manufacturing Corporation. The 108-pages are packed with easy-to-read data on selection and operation of drives.

Indexed sections cover standard, variable speed and special drives, Taper-Lock sheaves, Sealed-Life vee-belts, Taper-Lock bushings and hubs.

Engineering drawings, exploded views and tables of pre-engineered drives help in quick selection of a complete drive. Other charts give horsepower capacities, belt speeds, center distances, sheave diameters and other essential information.

Replacing Diesel Parts

"Can You Be Sure?" is the name of a new replacement parts booklet by Caterpillar Tractor Co. In it they develop the danger and expense inherent in substituting parts for those specified.

Drawings and cutaways emphasize manufacturer's physical and metallurgical design features of pistons, rings, pins and liners needed for optimum performance and life.

Like many Cat publications, this piece is available in French, Spanish, Portuguese, as well as English.

Industrial Grade O-Rings

For special sealing problems, Chicago Rawhide Manufacturing Company has cataloged a full range of industrial O-rings in standard sizes and compounds. Cross-sectioned drawings illustrate applications.

Hardness ratings, compatibility and temperature ranges are listed. There's a useful section on adaptation of standard O-rings for non-standard internal and external uses.

Exhaust Purifiers

"Exhaust Fumes Are Poison" is a new folder by Oxy-Catalyst, Inc. It points out technical characteristics and elimination data on catalytic exhaust purifiers for 4-cycle diesel and LPG engines.

These catalytic purifiers when operating at 60% load or better eliminate from 60 to 95% of the various objectionable exhaust elements, the maker states.

Dispersions for Industry

Revised listing of colloidal and semi-colloidal dispersions has been published by Acheson Colloids Company. These colloids are used for such jobs as dry-film lubricants and extreme temperature and high pressure lubricants.

Carriers and diluents are given for each product, along with important physical data. Five entirely new dispersions have been added to the list.

Efficient Filter-Separator

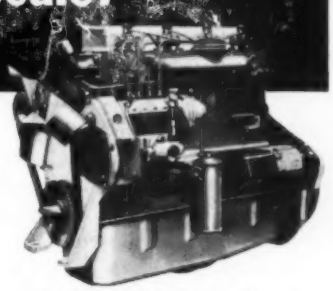
Useful data file on RECO 15-gpm filter-separator has been prepared by Richmond Engineering Company. Biggest feature of the unit is complete removal of undissolved water from hydrocarbon liquids—however finely dispersed such water may be—and removal of all solids over 5 microns.

Diesel fuels and lube oils are included in the checklist of 49 liquids which can be continuously cleaned by this automatic filter-separator.

Drawings show installation data, dimensions and attachments. Exploded views illustrate filter-separator cartridge construction and its replacement sequence.

PERKINS...

can help you sell more equipment on a world-wide scale!



420,000 Perkins diesel engines are now in use in 143 countries of the world—in 423 applications.

F. Perkins Ltd. have sales, service and parts outlets in 106 countries. Versatile Perkins engines are available to the specifications of your engineering department, anywhere in the world.

This means you can have your equipment shipped anywhere in the world—without motors—at less cost to you and your distributor. Your customer can then readily install a Perkins diesel package, tailored to your application and approved by your engineering department, at destination point. This would also reduce the dollar cost of the equipment, important to customers in the non dollar area.

Perkins maintain an engineering staff in Toronto, Canada. Phone them—they will fly down and discuss applications with you. Prototype installations can be made at Toronto or at your plant.

Cut shipping costs and assembly problems . . . call or write Perkins' Toronto office.

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new literature

Avoiding Corrosion In Water-Cooled Engines

Technical service bulletin on directions for treating closed engine and compressor cooling water systems has just been issued by D. W. Haering & Co., Inc. Both mobile and stationary units are covered.

Listed are factors which cause corrosion of engine blocks, cylinder liner failure due to pitting and impairment of cooling due to accumulations of corrosion products.

Proper inhibition of corrosion to control these factors are discussed.

Electrified Oil Well Drilling

Advantages of General Electric drive systems for electrified oil well drilling are discussed in an illustrated 4-page bulletin. It includes the types of diesel engines which can be used with these systems.

Quarterly by Twin Disc

Latest issue of Production Road, periodical published by Twin Disc, features the St. Lawrence Seaway which will bring ocean-going vessels into the heart of North America. Predictions are made on the new waterway's effect on commerce.

Another article on the new Twin Disc 8, 10 and 11 3/8-in. PO air clutches gives construction and ratings along with external and cross sectional views.

Also featured is the first British-built locomotive using a Twin Disc torque converter for the drive.

M-R-S Earthmovers

Their complete line of earthmoving equipment is covered in a new catalog by M-R-S Manufacturing Company. Cummins diesel power is utilized in all M-R-S tractors. Turbocharged engines are used in the four larger models.

Besides giving specifications, the 20-page booklet details the advantages of M-R-S hydraulic weight transfer. Color plates illustrate design features.

Manual On Detroit Diesel RDC's

A supplementary service manual, Form 6SE126, on Model 62806RD is now available from Detroit Diesel Engine Division, GM. This unit is used to power the Budd Rail Diesel Car. It covers the specific features of the RDC engine and is to be used along with the Series 110 maintenance manual, Form 6SE110, on the Roots blower type engine.

Conversion Factors Charted

Engineers and shop men will find the wall chart prepared by Precision Equipment Co. mighty handy. The reference table includes such conversion factors as inches to centimeters, watts to hp, cu ft. to liters, microns to meters and quintal to pounds and many others.

It's easy for you to ask for a copy of any of this material. Just fill in the postage-free card in the back of this book.

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Marseal the best PIPE THREAD JOINT SEALER

WILL NOT DISSOLVE IN DIESEL OILS, LUBRICATING OILS, GASOLINE, PROPANE, BUTANE

WITHSTANDS PRESSURE AND VIBRATION MAKES PERMANENT JOINTS • EASY TO TAKE APART

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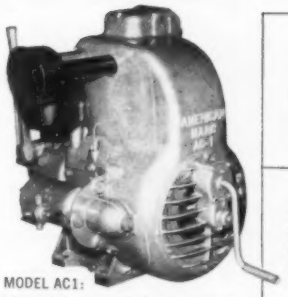

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1601 West Florence Ave. Inglewood, California
Dept. P-18 Telephone OR 8-7174 6-104

industry news

(*Continued from Page 43*)

Big Month For GE Locomotives

Shipments valued at just under $2 million were made during October by General Electric's locomotive and car equipment plant. The 27 units went to Argentina, Brazil, India, Nova Scotia, Venezuela and seven states. This is the top monthly production record in recent years, according to J. W. Braums, manager of GE mining and industrial locomotive sales.

Earthmoving Tactics

Students work both with models and the real thing at Greer Earthmoving School, Braidwood, Ill. They first learn to plan jobs and then operate bulldozers, tractors and other machines at an abandoned strip mine. The course is offered to help satisfy the big need for trained operators in the extensive federal highway program.

Smoke Elimination Development

Tests by Cooper-Bessemer engineers on a railroad diesel engine development show promise of eliminating exhaust smoke during acceleration of locomotives. As a result of initial work, the development is to be tried on mainline and switching service.

The 40-sec period when the engine smokes as the train accelerates has been reduced to 8 sec. A 4-man research team is continuing study of engine timing for even better scavenging during locomotive acceleration. Their tests, besides smoke reduction, indicate further increases in engine economy and added power for faster speed-up.

Trailers "Inched" Aboard

An Allison Model CRT-3340 Torqmatic transmission with "inching" control is a leading feature of the Four Wheel Drive Auto Company's Trailer Spotter.

This high-mobility vehicle is designed to maneuver semi-trailers on and off ships and railroad flat cars as well as around congested trucking terminals. It handles kingpin loads up to 26,000 lb.

The unit has manually-controlled full-power shifting with hydraulically-actuated clutches. This provides for quick shifting of the planetary range gearing, resulting in smooth distribution of power. It has three speeds in each direction, with a top speed of 27 mph pushing or pulling a fully-loaded trailer.

P-I-E Good Highway Citizen

It's good business to be a good community member. To continue as citizen-in-good-standing, Pacific Intermountain Express contributed $47,278 to United Fund — a $6000 boost over last year's amount.

Employees gave half of this amount with the company contributing an equal sum. Participation by personnel was 100% in 24 out of 49 P-I-E terminals.

(*Continued on Page 56*)

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industry news

(*Continued from Page* 55)

Sales by Nordberg

Nordberg Manufacturing Co. reports purchase of a 7-cyl, 2-cycle Duafuel engine by City of Robstown, Texas Utility Plant. The 21½-in. bore engine is rated 3450 hp at 240 rpm. Its attached generator will have a net rating of 2450 kw. The new Nordberg will bring capacity of this municipal plant to 11,890 hp — an increase of over 35%

Also announced is order from City of Osborne, Kansas, for a 1600-hp Nordberg Duafuel Supair-Thermal engine. The 4-cycle engine will have eight cylinders of 13-in. bore and operate at 450 rpm. This is the fifth diesel-generator unit to be manufactured at Nordberg's Busch-Sulzer Division plant for the City of Osborene. Elliott Company will build the 1135-net kw generator.

Another order for Nordberg is a 4200-bhp, 8-cyl, 2-cycle Duafuel unit for the City of Russell, Kansas municipal power plant. It will drive a 3000-net kw generator and increase the plant's capacity more than 27%.

Steamers Shelved

The era of steam locomotion in the vicinity of New York City is now history. The last of the steamers have been replaced by diesel-electrics in the Pennsylvania Railroad's passenger and freight service along the New Jersey coast.

Oxy-Catalyst to Exhibit Exhaust Purifier

The Plant Maintenance and Engineering Show will open in Chicago on January 27. Oxy-Catalyst, Inc. will include in its exhibit there its catalytic muffler, the OCM purifier, for use with 4-cycle diesel engines.

KIM
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electric pre-heater
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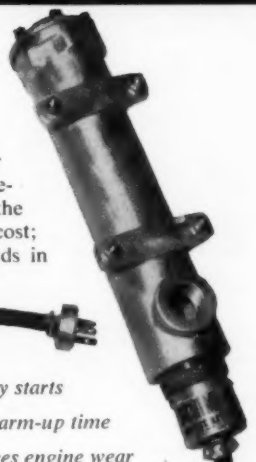

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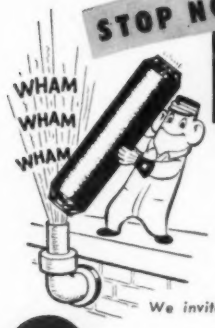

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new products

(*Continued from Page 47*)

Space-Saving Hose Assemblies

Stratoflex, Inc. introduces preformed Teflon hose assemblies as an answer to simplified design.

Shaped to almost any configuration under controlled heat, preformed Teflon minimizes design problems by allowing lines to clear obstructions and make connections with shortest possible hose length. It eliminates excess metal tubing normally required for special plumbing designs.

Expansion Joints

Here's a new expansion joint available for diesel exhausts, storage tanks and other types of industrial applications. Made by Pennsylvania Flexible Metallic Tubing Company, these expansion joints are recommended for conveying liquids where settlement, vibration or thermal expansion is a factor.

They absorb longitudinal and lateral movement in one cycle. Opposite ends of the joint can move laterally in opposite direction to complete an expansion cycle. All movements of the expansion joint are absorbed by free movements of each interlocked joint sealed with packing for high operating pressures. When expansion cycle is completed, interlocked joints lock the tube in a fixed position relieving stress on auxiliary equipment.

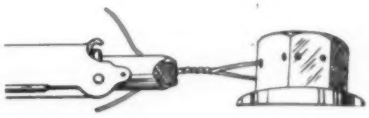
Charts, tabular material and full technical details on these Penflex expansion joints will be sent if you request them on the post card provided in the back of this publication.

Engine-Mated Mufflers

For users of heavy construction equipment, rugged mufflers are available from Alexander-Tagg Industries, Inc. Made of heavy gauge steel welded for added strength, they stand up under abuse of construction operations.

These engine-mated mufflers are said to give peak power quietly with minimum back pressure. This, the maker adds, eliminates excessive heat which causes burnt valves, warped heads and cracked manifolds.

Guaranteed for life against defects in materials and workmanship, ATI mufflers are made in three types — Power Guard, Sound Sentry and Diesel.



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Here's a time-saver for twisting safety wires. With Ziptwist just a pull does the job. Avionics Tool Company is the designer of this handy tool.

Simple jaw closing device requires only one hand for operation. Guide pins position wire and assure symmetrical twists. Instantly reversible, it twists either left or right. Spring steel lever lock adjusts to variations in wire sizes.

advertisers index

AiResearch Industrial Div., Garrett Corp., The 12
Air Maze Corp., The ..... ***
Albertson & Co. 10
Allis-Chalmers Mfg. Co. ..... ***
Allyn Mfg. Co. ..... ***
Aluminum Co. of America ..... ***
American Bosch Div., American Bosch Arma Corp. ..... ***
American M.A.R.C., Inc. 55
Amot Controls Corp. ..... ***
Association of Diesel Specialists 50

Bacharach Industrial Instrument Co., Inc. ..... ***
Bailey Technical Schools 52
Bell Diesel Research 52
Bendix Aviation Corp., Eclipse Div. 48
Bendix Aviation Corp., Scintilla Div. 8
Borg-Warner Corp., Rockford Clutch Div. 42
Bosch, Robert Corp. 31
Briggs Filtration Co., The ..... ***
Burgess-Manning Company ..... ***

C.A.V. Ltd. 47
Chicago Pneumatic Tool Co. 18
Cities Service Oil Co. ..... ***
Clark Equipment Co. ..... ***
Clayton Mfg. Co., Dynamometers Div. ..... ***
Cleveland Hone & Mfg. Co. ..... ***
Commercial Filters Corp. 9
Connell Co., W. J. 56
Cook, C. Lee Co. ..... ***
Cooper-Bessemer Corp. ..... ***
Cuno Engineering Corp. ..... ***
Curtiss Wright Corp., Utica Bend Div. 23

De Laval Steam Turbine Co. ..... ***
Delco-Remy Div., General Motors Corp. ..... ***
Detroit Controls Corporation ..... ***
Detroit Diesel Engine Div., General Motors Corp. 11
Diesel Fuel Injection Service, Inc. 56
Diesel Injection Sales & Service, North Carolina 56
Diesel Parts Co. of California, (SACO) 52
Diesel Plant Specialties ..... ***

Eaton Mfg. Co. 6
Eclipse Div., Bendix Aviation Corp. 48
Electro-Motive Div., General Motors Corp. ..... ***
Elliott Company 7
Engine Life Products Corp. ..... ***
Erie Forge & Steel Co. ..... ***

Fairbanks, Morse & Co. ..... ***
Florida Diesel & Electric Co. 56
Fram Corp. ..... ***
Fulton-Sylphon Div., Robertshaw-Fulton Controls Co. ..... ***

Garrett Corp., The AiResearch Industrial Div. 12
General Motors Corp., Delco-Remy Division ..... ***
General Motors Corp., Detroit Diesel Engine Div. 11
General Motors Corp., Electro-Motive Div. ..... ***
General Motors Corp., Harrison Radiator Div. 4
Gillett & Eaton, Inc. ..... 3rd Cover
Greenlee Bros. & Co. ..... ***

Harrison Radiator Div., General Motors Corp. 4
Hartford Machine Screw Co. ..... ***
Hercules Motors Corp. 2
Hilliard Corporation, The ..... ***
Houdaille Industries Inc., Buffalo Hydraulics Div. ..... ***
Houdaille Industries Inc., Manzel Div. ..... ***

Illinois Testing Laboratories, Inc. ..... ***
Ingersoll-Rand Co. ..... ***
International Nickel Co. ..... ***

Kato Engineering Co. 46
Kiene Diesel Accessories, Inc. 49
Kim Hotstart Mfg. Co. 57
Kittell Muffler & Engineering Inc. ..... ***
Koppers Co., Inc. ..... ***

Luber-Finer, Inc. ..... ***

Magneto Ignition Co., Inc. 56
Manzel Div., Houdaille Industries, Inc. ..... ***
Margate Mfg. Co. 52
Maschinenbau, Kiel, Aktiengesellschaft (MAK, Kiel, Germany) ..... ***
M.A.N. Maschinenfabrik Augsburg-Nurnberg (A.G. Augsburg, Germany) 3
Minneapolis-Honeywell Regulator Co. 33

Napier & Sons, Ltd. ..... ***
National Forge & Ordnance Co. 41
Norris, R. S. & Associates ..... ***
Nugent, Wm. W. & Co. 45

Oakite Products, Inc. ..... ***

Pacific Diesel Parts Co. ..... ***
Park Drop Forge Co., The ..... ***
Peninsular Engineering & Sales Co. 56
Perfect Circle Corp. ..... ***
Perkins, F. Ltd. 51

Quincy Compressor Co. ..... ***

Robertshaw-Fulton Controls Co., Fulton Sylphon Div. ..... ***
Rockford Clutch Div., Borg-Warner Corp. 42

Schwitzer Corp. ..... ***
Scintilla Div., Bendix Aviation Corp. 8
Sealed Power Corp. 14
Sharples Corp. ..... ***
Shell Oil Co. ..... ***
Snap-On Tools Corp. 43
Spray Products Corp. 50
Standard Oil Co., of California 19
Standard Oil Co., Inc. (Indiana) ..... Fourth Cover
Sturtevant, P. A. Co., The ..... ***
Synchro-Start Products Corp. 55

Texas Company, The ..... 2nd Cover & 1
Thomas Flexible Coupling Co. ..... ***
Thompson Products Inc., Jet Div. ..... ***
Tuthill Pump Co. ..... ***
Twin Disc Clutch Co. ..... ***

Unex Products Corp. 56
United Engine & Machine Co. ..... ***

Van Norman Automotive Equipment Co. ..... ***
Vellumoid Co. ..... ***
Viking Pump Co. 46

Wagner Electric Corp. ..... ***
Waukesha Motor Co. 39
White Diesel Eng. Div., White Motor Co. ..... ***
Wilkening Manufacturing Co. 25
Winona Tool Mfg. Co. 49
Woodward Governor Co., Inc. ..... ***
Wyman-Gordon Company 27

Young Radiator Company ..... ***

Zollner Corp. 35

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★ **Low initial cost— Low cost per mile**

★ **Amazing increase in piston life**

★ **Maintains new engine power and performance**

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With the thousands of G & E "Wire Insert" Pistons in use for periods up to 3 years—NOT A SINGLE FAILURE of the "Wire Insert" has been reported to us. The "Wire Insert" greatly reduces top ring groove wear and increases piston life. It stays put—DOES NOT COME LOOSE! It can never cause internal engine damage that results in break-downs on the road and emergency overhauls.

The "Wire Insert" piston design—exclusive with G & E—combines all the advantages of aluminum alloy pistons with the long life of steel in the top ring groove. No noticeable increase in weight—no interference with heat flow—and the cost is barely more than ordinary alloy pistons.

You get longer piston wear at lower cost because G & E Wire Insert Pistons have a pre-shaped steel wire cast right in the piston wall where the top ring is located. When the grooves are machined, this tough wire is cut, exposing the closely spaced hard surfaced bearing points on top and bottom faces of the groove.

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